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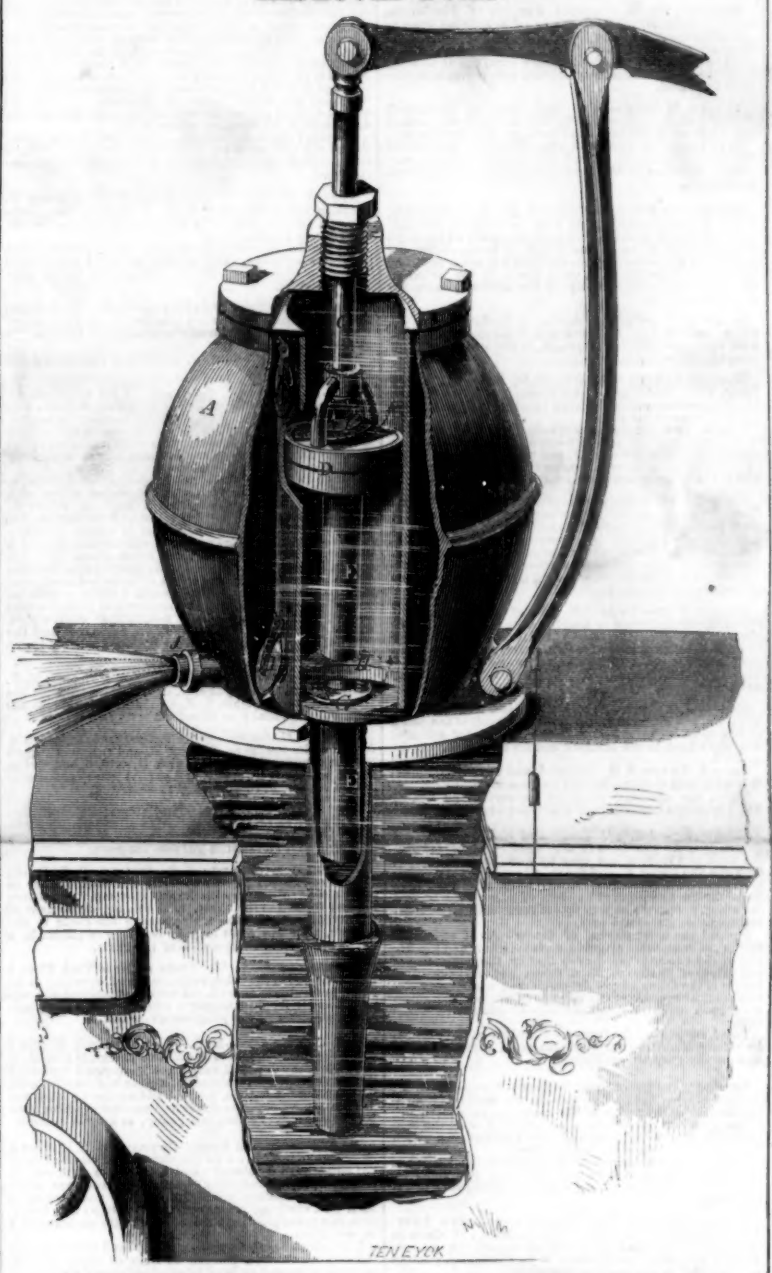
Motion and Heat.

Mons. Foucault, of Paris, the inventor of the famous pendulum experiments which set the world agog a few years ago, has lately constructed an apparatus to demonstrate that motion produces caloric. Arago, while observing the movements of a magnetic needle placed in a case constructed of copper, remarked that the needle oscillated during a lapse of time less than was to be anticipated from its great mobility, and thought that if the copper had no action, *per se*, upon a magnetic needle in a state of rest, it might acquire an influence by the oscillation of the needle.

He then placed a magnetic needle upon copper disks of different thicknesses, and after allowing it to acquire its natural position, set it in motion. The magnitude of the variations of the needle diminished in proportion to the thickness of the disk. The same phenomenon was remarked with disks of zinc and tin, since the needle in motion acts upon the disk, the same results should be obtained when the disk is put in motion. Thus, if a disk is made to turn above a magnetic needle, the latter will be seen to leave its normal position, change its direction, and deviate therefrom to an angle, which increases in proportion to the augmented rapidity of motion communicated to the disk, until the needle turns upon its pivot, following the motion of the disk in every direction. If the disk be sawn through, following the line of several radii, the action is less energetic. In order that it might not be supposed the movements of the needle were induced by the revolving currents of air created by the rotation of the disk, the needle was separated from the latter by a membrane, and enclosed in a case. From this experiment has been deduced, that if the needle were rendered fixed the disk would meet with a certain resistance to its revolutions. Upon this theory M. Foucault has based his machine. A thick bar of iron, bent into a horse-shoe form, is converted into an electro magnet; between its two extremities is supported a disk of copper, to which a rapid rotary motion—300 or 400 revolutions a second—is communicated by the intervention of toothed gearing. So long as the horse shoe is not electro-magnetized the disk turns with ease, but so soon as the horse shoe is placed in communication with a battery, and thereby converted into an electro-magnet, a great resistance to the further revolution of the disk is made manifest. If, in spite of this resistance, the disk is turned during a minute or so, and a thermometer be placed upon the disk, the mercury will ascend to 60 or 80° (centigrade,) although the toothed gearing axles, &c., remain at the ordinary temperature. There is, however, no point of contact, no friction, and the disk alone is heated.

The Cleveland, O., *Herald* says that over one hundred thousand gallons of stone-ware are annually shipped from that port. It is manufactured near Akron, and is of a superior quality. In addition to this, the clay is in great demand, and is shipped in bulk on board vessels running to Milwaukie, where it is also manufactured.

IMPROVED PUMP.



Improved Force and Lift Pump.

Our engraving illustrates the pump of Mr. Benj. F. Joslyn, Worcester, Mass., which was patented April 3d, 1855. The principal advantages which the invention has over the ordinary force pump is, economy in the manufacture, direct flow of the water, whereby better results are obtained from a given amount of power, simplicity of parts, &c.

A is the air chamber, and B the piston barrel, which passes directly through the air chamber. C is the piston rod, D the piston. Attached to the piston rod and moving with it, is a hollow tube, E. F is a valve placed on the piston, at the top of tube E. When the piston descends a vacuum is produced above D, and the water rushes up through tube, E, and valve, F, to fill the same, as shown by the arrows.

G is a round valve, through which the tube E passes, but the two are not connected; tube E slides through valve G; the valve is kept in place between the partition grate, H, and its seat, by means of small springs. When the piston descends, valve G closes, and the water between the piston and valve G is forced through side valve, I, into the air chamber, whence it escapes through the exit pipe, J; the outward course of the water, it will be observed, is on a direct line.

When the piston rises, valve I shuts; a vacuum is produced below the piston, and the water rushes up, lifts valve G, and fills the vacuum; by this movement the water above the piston is forced into the air chamber through valve K.

It will be observed that this pump is exceedingly compact. All the parts are packed into a small compass, yet, as a whole, it appears to be highly effective, durable, &c. In our cut it is shown applied as a garden or domestic fire-engine—a machine with which every farmer or gardner should be provided. Apply to Mr. Wm. C. Freeman, No. 115 Nassau st., for further information.

Salt.

Although salt forms part of the daily food of nearly the whole of the human race, yet few have any idea of its composition. Salt is a compound of two substances, a metal and gaseous body. The metal is called sodium, and the gas chlorine; and as chemists always endeavor to use such terms as they think will convey a clear idea of the things they describe, salt in chemical language is termed "chloride of sodium." The ocean which flows to every part of the earth affords its inhabitants an inexhaustible supply of salt; and lest it might be thought that nature had not in this respect been sufficiently bountiful, she supplies salt from the "bowels of the earth." We have salt mines yielding "rock salt," and salt springs, which, in many instances, are far away from the ocean, such as those at Syracuse, N. Y., in America. The salt mines in Catalonia, in Hungary, and Poland, are of an enormous extent. A salt mine at Wilisca, near Cracow, in Poland, has been worked for more than six hundred years. Within it is found a kind of subterraneous republic, which has its polity, laws, families, &c. When a traveler has arrived at the bottom of this strange abyss he is surprised at the long series of lofty vaults sustained with huge pillars of rock salt, and which appear by the light of the flambeaux to be so many crystals of precious stones. The most remarkable property of salt is its solubility in water hence it is supposed that the sea washing over beds or strata of salt has in consequence become saline, as we now find it. The use of salt with food is obvious from an analysis of the blood and the gastric juice. With the addition of water, and under certain influences, salt changes its composition. Water being composed of hydrogen and oxygen, the change in salt which takes place by means of the vital force produces soda for the blood and hydrochloric acid for the stomach. As soda is invariably found in the blood, and hydrochloric acid in the stomach; and as the blood and the stomach play their part correctly enough in our daily life, we can come to no other conclusion than that salt, which supplies these materials, is absolutely necessary to our well-being. Salt is not only useful to man in its primitive condition, but as it affords soda, its value is manifestly increased. The manufacture of soda from salt in England is one of the most important of our arts, for without soda no hard soaps could be produced; and for a thousand other things are we a debtor to Salt & Co. Besides the soda there is the chlorine. The great supremacy of the Manchester cotton mills in supplying the wide world with fabrics, is owing not only to the application of mechanics to machinery, but also to the multifarious uses of chlorine derived from common salt. SEPTIMUS PIESSE.

Disinfecting Agents.

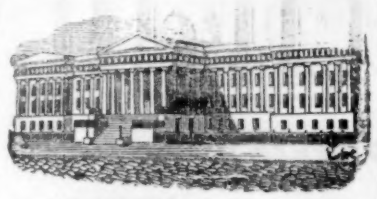
The best and most simple disinfecting agent known is the chloride of zinc. It is made by dissolving zinc in muriatic acid, and is applied in a diluted state, to foul and offensive drains cesspools, &c. The sulphate of zinc, however, is nearly as good, is cheaper, and is more easily managed. It can be purchased at any druggists in the form of a salt. A pound of it dissolved in two pails of warm water and thrown into an offensive cesspool, will soon deodorize it. During hot weather this disinfecting agent should be applied pretty freely in thousands of places in New York and other cities. Copperas (sulphate of iron) may be applied in the same manner and for the same purpose. It is not such a good disinfectant as the chloride of zinc, but it is much cheaper.

Gold Quartz Factories.

There are at present 63 factories situated in different parts of California in which quartz grinding and extracting the gold by machinery is carried on. Thirty of these are driven by steam engines, the others by water wheels. The gold quartz mining and crushing is rapidly on the increase in California.

Sharpe's Rifles for England.

The British Government, it is said, lately made large contracts for Sharpe's rifles with some of our manufacturers, and the manufacture of them by American mechanics at Edgefield, England, is now being carried on under a tremendous press of steam, to supply the army as soon as possible.



[Reported Officially for the Scientific American.]

LIST OF PATENT CLAIMS

Issued from the United States Patent Office

FOR THE WEEK ENDING JUNE 4, 1856.

UTERINE SUPPORTERS.—Wm. Alley, of Columbus, Ga.: I claim the circular rings, perpendicular springs, and the hinges to the rings.

GAS BURNING LAMPS—Solomon Andrews, of Perth Amboy, N. J.: I claim the wick tube surrounded by an outer tube or cylinder, in the manner and for the purpose described.

MARBLE SAWING MACHINES—Josiah Ashenfelder, of Philadelphia, Pa.: I claim operating the saws by means of pins, K, and shaft, L, attached to the drums, A A', in combination with connecting rods, M M, and slotted guide bars, S S, when these parts are constructed, arranged and operated, substantially in the manner and for the purpose set forth.

FEEDING APPARATUS FOR GAS RETORTS—N. Aubin, of Albany, N. Y.: I claim the vessel, H, to contain the materials from which the gas is to be made, in combination with the inner vessel or weight, J, arranged so as to gradually expel the contents of the vessel, H, as they are melted or rendered more fluid by the heat of the retort, and thereby afford a regular supply of said materials to the gas making process going on in the retort, substantially as described.

REGULATING WINDMILLS—Jesse Battey, of Honeoye Falls, N. Y.: I do not claim the wind wheel in itself considered. Neither do I claim the regulator, D, separately, as similar ones have been used before.

I claim the regulator, E, either with a perpendicular or inclined wing, or with the shaft, H, standing upright, and the wing turning horizontally, and its combination with the regulator, D, also the rotary vane, C, and its arrangement, and the connection of the combined regulators, E and D, or either of them separately therewith, for the purpose of securing uniformity of speed in any manner substantially the same as described.

And lastly, I claim the entire arrangement for starting and stopping the mill, as specified, or any arrangement substantially the same.

PIANOFORTE ACTION—Joseph Becker, of New York City: I claim the double broken action as shown in plate 1, fig. 3, namely as follows, G2 and G3 H2 F2 J2 K2 J3 J3 N1 Z Z B4 A4 X B3 Q B3 Q X4 X5 X3 X2, the said part or parts being combined and acting together completely, the whole arrangement of the double broken arrangements, as described and set forth.

RELIEVING SLIDE VALVES—Wm. Burdon, of Brooklyn, N. Y.: I claim the employment of a hollow cylinder, E, with a closed head, B, supported upon wheels to run back and forth on the valve seat, or on ways parallel thereto, and receiving a piston, C, attached rigidly to the valve, and thereby being caused to travel with the valve and relieve it of all pressure of steam beyond what is necessary to confine the valve to its seat.

WINDOW FRAMES—John Casey, of New York City: I do not claim having a portion of one of the stiles made adjustable or movable, irrespective of the arrangement of the same, or the manner in which said portion is operated.

I claim having the portion, C, of one of the stiles, e, of the casing provided with curved slots, h, at its upper and lower ends, and having lugs, i, which are attached to the stile fit in the slots, h, whereby the part or portion C is rendered adjustable as shown, for the purpose specified.

NUT MACHINES—Richard H. Cole, of St. Louis, Mo.: I claim the arrangement of the round, f', within an aperture in the angular punch, d, at the same time that a round punch, e, is arranged within an aperture in the bottom, i, of nut box, when the said round punches are combined with movements which cause them to act jointly in perforating holes in the nuts formed in said nut box, substantially as set forth.

I also claim the joint arrangement of the angular punch, d, or its interior round punch, f', with the bottom, i, of the nut box, and the interior round punch, e, when the said bottom of the nut box is combined with a spring or its equivalent, in such a manner in relation to the said angular punch, d, and the round punches, e and f', that the action of the said parts in forming a nut will cause the completed nut to be thicker than the bar from which the blank was cut, substantially as set forth.

WALLS OF BUILDINGS—Thomas Estlack, of Philadelphia, Pa.: I disclaim all discharge shutes where a continuous and connected surface is employed, such as is shown in the arrangements for relieving from surface water the decks of vessels and flat roofs of houses.

But I claim the combination of the receiver, C, in the masonry of the wall, as described, with the shute, D, extending over and into the receiver, secured to the floor to be relieved, and altogether detached from the aforesaid receiver, as and for preventing damage to goods by water in cases of fires.

POLISHING METALLIC NUTS—Richard H. and John C. Cole, of St. Louis, Mo.: We claim the arrangement of the planing wheel, D, and the nut carrying endless chain with the partially inclined and partially horizontal groove, f, the sustaining plates, e e, and the edge guiding plates, d d, or their equivalents, substantially in the manner and for the purpose set forth.

ROTARY BRICK MACHINES—George Crangle, of Philadelphia, Pa.: I do not claim a rotary double cylinder brick machine, as such machines have been used before; nor do I claim arranging the molds around the cylinder so as to alternate with two plungers on one actuating shaft.

But I claim the apparatus for rotating and stopping the cylinders of rotary brick machines, as described, the said apparatus consisting of the armed disk, I, the branched lever, M, the bent lever, T, pawl, U, and the ratchet wheels, Q and R, the same being constructed, arranged, combined and operating substantially in the manner and for the purpose set forth,

NEEDLES FOR KNITTING MACHINES—Rufus Ellis, of Boston, Mass.: I claim making the journals, c d, or connecting rod of the hinge fast to the male or entering projections thereof, in combination with so constructing the female socket of the hinge so as to enable the male part of its journals to be moved downwards and laterally, in order to detach the same from the female part with a spring stop or its equivalent, whereby, when the male and female parts of the hinge of two links are connected together, they may be prevented from accidental disengagement, as explained.

SAW SET—Benjamin Gilpatrick, of Lowell, Mass.: I claim the pedestal, F, the screw, H, attached thereto, and the check nut, I, and truncated cone, J, or their mechanical equivalents, arranged and operated essentially in the manner and for the purposes set forth.

FELTING HAT BODIES—Sylvester H. Gray, of Bridgeport, Conn.: I am aware that hat bodies have been felted or sized by being rolled between a bed and pressure plate by the action of a compound, continuous and reciprocating motion, and therefore I do not wish to be understood as claiming the method of giving the felting action by such compound motion.

But I claim the manner, substantially as described, in which the compound, continuous, and vibratory motion is imparted to the endless bed.

GAS RETORT BENCH—John G. Hock, of Newark, N. J.: I claim the described arrangement of flues by which the flame and heated products of combustion are caused to pass first under the bottom retorts, A A, next under the top retort, A2, then under the retorts, A A', and over A A, and finally over A' A' and A2, as set forth.

GAS CONSUMING FURNACES—Jacob Green, of Philadelphia, Pa.: I am aware that the mere introduction of air into furnaces by union pipes for the purpose of furnishing a portion through the grate bars and a part to the upper side or behind the fuel is not new, I therefore do not claim that as the point of novelty, but I believe that the means I have presented for simultaneously operating the controlling valves of such union pipes are new.

I am aware that E. Ingalls proposed an improvement in smoke consuming furnaces, wherein a mere circulation of the smoke or gases from the fire space or flue with the underside of the grate bars is effected by the use of a fan or blower situated in said circulation pipe, and that he also provided inlet valves to supply a vacuum if occurring, as well as an exit valve in the smoke stack for excess of pressure, all of said valves operating independent of and uncontrolled by each other; I therefore do not claim such as my improvement.

But I claim the mode of regulating the admission of air to furnaces so that such admission shall be controlled by the furnace itself by means of lever, H, and valve, D, in connection with the rod, n, and valve, b, and rod, o, and valve, e, operating substantially in the manner described.

COPYING PRESS—Christian Knauer, of Pittsburgh, Pa.: I claim adjusting the plates of a copying press to suit different sized books, by means of a regulating cam, C, which carries the top plate, D, so arranged that it shall be the bearing of the pressure cam, either directly or by the intervention of the friction piece, J, substantially as described.

SAWING MACHINE—Wm. D. Leavitt, of Cincinnati, Ohio: I disclaim moving the saw laterally for gauging the thickness of the board to be cut, as such is not new.

But I claim the specified arrangement of devices for effecting that purpose, when combined with the mechanism described for setting the saw forward in its own plane, as set forth.

HARVESTER FRAMES—Henry F. Mann, of Westville, Ind.: I claim inclining the rear portions of the side pieces, B C, so that the shaft, b, may lie upon and have the same dip with the one, C, on which it is supported, for the double purpose of giving said shaft a firm support, and to bring its drive wheel, J, close down to the pinion on the crank shaft, substantially in the manner and for the purposes set forth.

MELODEONS—Wm. N. Manning, of Rockport, Mass.: I claim the reed box, S, made in the manner described, with the perpendicular valves, M, in the manner and for the purpose set forth.

MARBLE SAWING MACHINE—Robt. Myers, of Factory Point, Vt.: Disclaiming the method of adjusting the crank shafts around the driving shafts, and of adjustable guides to govern the saws.

I claim the arrangement of the shafts, B and C, relative to the driving shaft, and to each other as described, in combination with the saws, P, and varying pitmans, K, for effecting the simultaneous cutting of three or more taper blocks at a single operation, as described.

WOOL CARDING MACHINES—Foster Nowell, of Lowell Mass.: I claim the use in carding machines of two surfaces for conducting and rubbing the sliver from the ring doffers, one of which is cylindrical and of permanent form, and the other a belt or apron of flexible material, and capable of adjusting itself to the shape of the cylindrical rubber and the sliver, or roving between itself and the cylindrical rubber, as described.

MAKING NUTS—Richard H. Cole, of St. Louis, Mo.: I claim the manufacture of metallic nuts by forcing a portion or the whole of the metal displaced in forming the holes in the nuts into the bodies of the nuts, by which I am enabled to make the nuts thicker and more compact than the bar from which they are cut, all substantially as set forth.

GLASS FURNACES—Samuel Richards, of Philadelphia, Pa.: I claim the preparatory deposit of the batch in the cone of an ordinary glass furnaces for utilizing the waste heat, in the manner and for the purpose as described.

Second, the car, P Q, arranged and used in combination with said shelves, for the purpose as described.

Third, the movable spout for conveying the heated batch from the heating shelves into the crucibles.

MELODEONS—Josiah A. Rollins, of Buffalo, N. Y.: I claim, first, the extension of the wind receiver towards the back and front of the case by forming cavities, a a, between the frame, C, and the tube board, D, substantially as described, thereby obtaining room under the tube board for the operation of two sets of valves, one behind the other, to operate on four sets of reeds without increasing the usual size of the case.

Second, the arrangement of the two sets of valves, E and E', tering their movable ends together, and the fitting of the two ends together so that by the depression of the valves of one set to open them, the corresponding valves of the other set are depressed and opened, thereby effecting the opening of the two sets of valves by a single set of push down pins, and the keys of ordinary construction.

Third, supporting the front set of valves at their hinges by a strip, k, of wood or other material, substantially as and for the purposes set forth.

SEWING MACHINES FOR BINDING HATS—Isaac M. Singer, of New York City: I claim the method of turning the hat by the action of the spring or its equivalent, substantially as described, in combination with the feed motion acting on the rim, and the gauge against which the edge of the rim bears, as described.

And I also claim the mode of regulating the tension of the binding and smoothing out the plaits and links by passing it around the several folds of a spring such as described.

ELASTIC BOTTOMS FOR CHAIRS AND OTHER ARTICLES—Lysander Spooner, of Boston, Mass.: I claim in the construction of an elastic rest or support the employment of a series of elastic coils, B B, substantially in the manner and for the purposes described.

BORING MACHINE—Wm. Samuels & G. L. Stanbury, of Jackson, Ind. We claim the power boring machine, constructed as and for the purposes described.

COOKING STOVES—Wm. B. Treadwell, of Albany, N. Y.: I claim connecting the flue in front of the oven with the exit pipe by means of a tubular flue or flues at top, and forming part of the top of the oven, substantially as specified, in combination with the plate which forms the residue of the top of the oven, substantially as and for the purpose specified.

MARBLE SAWING—J. A. Toll, of Sugar Ridge, Ohio: I claim the combination of sawgates, adjustable fenders, and pair of actuating rollers, f f, having simultaneous vibration, the rollers, f f, being secured in bearings in the top of rockers, g g, so as to permit of being easily removed when it is desired to take out or replace a gate, the whole being arranged and operated substantially in the manner and for the purpose set forth.

OPERATING VALVES OF STEAM ENGINES—Otis Tufts, of Boston, Mass.: I claim, first, the oscillating plate with its attachments, carrying the adjustable cut-off cams acting with their sliding rolls, for cutting off the steam variably, substantially as described.

Second, the self-adjusting arrester and its parts acting on the closing edge of the adjustable cut-off cam, for easing off the motion of the cut-off valve and its gear, substantially as described.

Third, the adjusted arrangement in combination of the cut-off and exhaust cams, to work the cut-off and exhaust valves united, substantially as described.

Fourth, the double arm, with its sliding and other roll acting alternately on the cut-off and exhaust cams, substantially as described.

Fifth, the gear joint connection between the regulator shaft and the adjusting screw for working them together while one is fixed and the other oscillates, substantially as described.

Sixth, the sliding carrier with its attachments and friction-held nut for adjusting the variable cut-off cams on the oscillating plate by the regulator, substantially as described.

Seventh, the arrangement of the adjustable coil springs, in combination with their shaft and lever for forcing the rolls to the cams, substantially as described.

GAS REGULATORS—Marshal Wheeler, of Honesdale, Pa.: I claim the combination of the gasometer and its goose-neck with the fluid receptacle, and with the graduated lever, i, and the weighing poise, j, substantially as set forth.

GRAIN AND GRASS HARVESTERS—Allen B. Wilson, of Waterbury, Conn.: I claim the elastic strips, a, fitted in the fingers, C, and arranged substantially as described, for the purpose specified.

SAWING MACHINE—Henry S. Vrooman, of Logansport, Ind.: I do not claim giving saws a lateral movement in their sashes for sawing curved or irregular formed articles, for this has been previously done.

But I claim, first, the combination of the frame, F G, and sashes, H, when connected and arranged, as shown, so that the sashes, H, and frame, G, may be turned within or upon the frame, F, and thereby allow the saw to be operated in oblique positions, for the purpose specified.

Second, I claim the employment or use of two patterns, J, M, when said patterns are so arranged or connected with the frames, F G, and saw sashes, H H, that one pattern, J, will give the saw its lateral movement, and also turn the saw in the sashes, so that their teeth will face the intended direction of the cuts or kerfs, while the other pattern, M, will move the saw when necessary more or less obliquely, to give the winding or beveled side to the work or stuff, as described.

FILTER—Chapman Warner, of Green Point, N. Y.: I do not claim withdrawing the fluid in the opposite direction from that by which it entered, for the purpose of cleaning the material; nor do I claim combining two vessels so as to allow the fluid to descend from the one below the filtering material, and thence upwards through it into the other vessel, irrespective of the method described.

I claim, first, constructing the cistern, vessel, or reservoir, A, with an inner well, or vessel, B, the lower part of which projects below the bottom of the cistern or vessel, A, and is provided with any proper filtering material, the lower part of the well or vessel, B, communicating with the lower part of the vessel, A, by a tube, C, provided with the lower part of the well or vessel, B, substantially as described, for the purpose specified.

Second, I claim the flanch, G, attached to the inner side of the well or vessel, B, between the layers, F H, of charcoal and sand, substantially as shown for the purpose specified.

ATTACHING STEM TO A CONICAL VALVE—Henry R. Worthington, of Brooklyn, N. Y.: I disclaim the invention of a cone or plug, lifted by means of a screw in the direction of its axis.

But I claim the use of the hollow conical plug with the apparatus for opening and closing the same attached at the bottom of said plug, in the manner and for the purposes set forth.

LOCK—Linus Yale, Jr., of Newport, N. Y.: I claim, first, the peculiar form of the tumbler, A, or an equivalent form, in combination with a changeable key, for the purpose described.

Second, the rib or wing, c', used in any manner for the purpose described.

FIRE-ARMS—F. B. C. Beaumont, of Upper Woodhall, Barnsley, Eng. Patented in England, Feb. 20, 1855: I do not claim to raise and discharge the hammer of a revolver by the action of the trigger when separately considered. Neither do I claim to arrange the lock of a revolver in such manner that the hammer may be cocked by hand, when separately considered.

Nor do I claim to rotate the magazine of barrels of a revolver, by a mechanism so connected either with the trigger or a hammer, that a pull on either [of them shall effect such turning of the said mechanism, but when the hammer has a mechanism by which said hammer may be set to cock by a direct pull upon it, and when the trigger, hammer, and rotary series of barrels are so combined that by a backward pull on the trigger the hammer shall be elevated, the series of barrels turned, and the hammer set free or discharged, I claim combining with the hammer and trigger a mechanism (vide licet the hook, l, and slot, x, or their mechanical equivalents) whereby the trigger shall be drawn backward and the series of barrels turned while the hammer is being drawn back by a direct pull on it, as specified.

WASHING MACHINES—Solon Bishop, of Homer, N. Y. I claim the use of the yoke, G, in combination with the spindle, B, and uprights, E E, for giving steadiness to the disk, D, substantially as described.

WASHING MACHINES—John T. Bever, of Haynesville, Mo.: I claim the lever, D, stem, E, and rubber, F, when used in combination with the arm, G, cord, h, and spring, H, for producing a vertical and partial rotary movement of said rubber, F, substantially as described.

HAND CORN PLANTER—S. L. Denney, of Pennington-ville, Pa.: I claim the combination of the planting cylinder, C, the pistons, a a, and the funnel, F, substantially in the manner and for the purpose set forth.

ELASTIC BEARINGS FOR R. R. CHAIRS—D. L. Davis, of Dedham, Mass.: I claim covering the india rubber or other elastic substance with the metallic cap, E, constructed and applied to the chair, so as to be independent of the control of the spikes which secure the chair to the sleeper, that the plate may be left free to vibrate in a vertical direction independent of the chair.

AMALGAMATOR—J. W. Evans, of New York City: I claim the use of the rake, supported and operated as set forth, in combination with the rocker supported and operated as set forth, whereby a compound agitating motion is obtained for the purposes described.

R. R. CAR BRAKES—M. S. Frost, of Detroit, Mich.: I claim the arrangement of the sliding blocks, D D N N, at the ends of the car platforms for engaging and operating simultaneously a set of through bumper and traction rods, for applying the brakes, the said sliding blocks being under the conirol of the engineer and capable of acting upon both sets of rods or either separately, as may be desired.

SELF-REGISTERING SHIPS' COMPASSES—R. H. Peverly, of Chelsea, Mass.: I do not claim the described devices separately considered; and I am aware that various electro-magnetic and other instruments have been made to record automatically their indications and periods of such on a clock-fed continuous fillet or strip; this, therefore, as a principle or system of automatic registration I do not claim.

But I claim regulating permanently and automatically the ship courses on a continuous strip of paper or other material at known or fixed intervals of time for a part or the whole of the voyage, substantially as specified, by means of the continuous clock-feed to the fillet or strip in combination with the ships' compass and marker, arranged and operating together essentially as set forth.

SUBSOIL PLOWS—Cyrus Garrett and Thomas Cottman, of Cincinnati, Ohio: We claim the arrangement of the standard, 3, flange, 4, share, 1, and mold-board, 5, and these arranged with the brace bar, 9, and stay bar, 6, for purposes mentioned.

PARALACTIC INSTRUMENTS FOR MEASURING DISTANCES—H. L. Hervey, of Quincy, Ill.: I do not claim to have been the first to measure distances by means of a base line within the instrument, several different forms of instruments having been long since contrived for this purpose. In some of these two telescopes are used at the ends of a fixed or invariable base. In the patented instrument of Wm. Wurdeman, a single telescope is mounted on pivots in such manner as to take two paralax positions at the ends of snch a base, and the paaallel is measured by a micrometer. Another instrument consists of a single telescope and a pair of mirrors, of which one slides over a variable base, which thus furnishes a scale of distances. I do not therefore claim as new the use of either a fixed or variable base line in the instrument.

But I claim combining the traversing or sliding telescope with the fixed one, in such a manner as to measure distances, by means of a constant angle between them, and a variable base, substantially as set forth.

WASHING MACHINES—John McChesney, of Louisville, Ky.: I am aware that in the patent granted Joel Haines, for a washing machine, Feb. 5, 1850, the disk is made with a hinged segment (to admit the clothes beneath the same) being so arranged as to rise and fall vertically as it is turned horizontally over the clothes, by turning the vertical rock shaft to the right and left. This feature I do not claim, my invention consisting only in an improvement upon the machine of said Joel Haines.

I claim the adjustable suspension of the rubber disk, by cords, ratchet and pawl, as described, in combination with the rotary, radial, fluted frustums of cones in the rubbing face of said disk, operating substantially as and for the purposes set forth.

REVOLVING LAST HOLDERS.—Josiah Mumford, of Clarksburg, Ohso: I am aware a revolving last holder has been patented; this I do not claim. Nor do I claim arranging two revolving arms on one standard, as this has been done.

But I claim so arranging the two arms carrying each a last to one revolving plate, having two inclined planes upon it, as that both arms shall revolve at once, and when the last on one shall be up the other shall be down, and vice versa, for the purpose of bringing one last into convenient position for the operator, and removing the other one entirely out of his way and in the manner set forth.

FIRE ARMS—George Gosling, of Lebanon, Ohio; I am aware that a series of charges have been used in fire-arms, in which the balls were perforated and furnished with a fuse, for the purpose of igniting the rear charge, by the discharge of the one in advance of it, by means of said fuse; but no provision had been made for the escape of the air, in driving the balls home, whilst the ball and patching must be air-tight, to prevent the fire from driving past the ball. I do not therefore claim such a fire-arm.

But I claim the constructing of a gun or fire-arm, as described, for firing a succession of shots, thus forming a new article of manufacture superior for practicable purposes to any now in use, as set forth.

HANDLING BARRELS, &c.—Servetus Longley, of Cincinnati, Ohio: I claim the levers, 2 and 3, in combination with the spring, 6, chains, 8, cam attachment, 9, clutches, 10 and 11, working freely upon wrists and the handle, 4, all substantially as described and for the purposes set forth.

REAPING MACHINES—Jacob J. and H. F. Mann, of Westville, Ind.: We claim no part of the general construction of the machine; and we are well aware that we have been anticipated in the use of an endless apron passing horizontally across the space otherwise occupied by the platform, whence it ascends in an angle to deposit the grain in a reservoir, which retains it until a sufficient amount has accumulated to form a gavel when it is separated from the ascending grain by a raking attachment, and discharged upon the ground. We are also aware that in such elevating endless aprons, slots or cleets have been used to retain the grain thereon.

We claim the combination of the bar or plate, H, or of other equivalent device at the back of the apron, with the strip, e, beneath the apron and the bar or plate, G, upon the finger bar, under which the said strip, e, and over which the apron extends, or with other equivalent device, substantially as and for the purpose above set forth.

RAKING AND LOADING HAY—Jos. Smith of Condit, Ohio: I claim the spring guard plate, s, operated by the rake, for the purposes set forth.

HUSKING CORN—Oren Stoddard, of Busti, N. Y.: I claim the two stripping rollers, constructed and arranged as shown, in combination with the cutting device formed of the gate or frame, M, with knife, P, attached and the stationary knife, Q, on the platform, N, the frame, M, being operated substantially as shown, whereby the husks are stripped from the ears, and the ears cut from the stalks. I further claim, in combination with the stripping rollers and cutting device, the rollers, W W, by which the ears are fed or guided into the inclined spout, Y, as described.

LATTICE BRIDGES—L. E. Truesdell, of Warren, Mass.: I claim the braces, C D, in combination with the rafters, A, when arranged in the manner substantially as and for the purposes described.

DRIVING WHEELS FOR STEAM DRAGS—Geo. W. N' Yost, of Pittsburg, Pa.: I do not claim the combined arrangement and construction of devices, as set forth in the case of Huermann & Reeves, for alleged improvements in grain and grass harvesters, as this could not answer my purpose.

Neither do I claim the devices described in the case of J. H. Babcock, for a similar purpose.

I claim, first, the combination of the double angular flanges, b b, with the surface of a driving wheel for the purposes specified.

Second, I also claim, in combination with the flanges, b b, the clearers arranged and operating substantially in the manner set forth.

STEAM LAND PROPELLER—G. W. N. Yost, of Pittsburg, Pa.: I do not broadly claim the combination of the rotary engine with the driving wheels by means of cogged gearing.

Neither do I claim my arrangement of cogged gearing separately.

But I claim the combiuation and arrangement of a rotary engine with the driving wheels of a land propeller by means of the described combination and arrangement of cogged gearing in the manner and for the purposes substantially as set forth.

VISE—Samuel Fahrney, of Boonsboro, Md, (assignor to Abraham Huffer & Benj. Fahrney, of Washington Co., Md.): I claim the use of the sectors, D D, in combination with the studs, G, constructed and operated as described, for the purpose of rendering the jaws of the vise parallel to each other.

SCREWS—Cullen Whipple, (assignor to the New England Screw Co.) of Providence, R. I.: I claim the combination of the feeding slot, a a, moving series of discharging grooves, c, and guard plate, M, but I make no claim to either of these elements of the combination by itself.

MITER BOX—Wm. P. Wood (assignor to Samuel De Vaughan and Wm. P. P. Wood,) of Washington, D. C.: I claim the arms, C, when operated in the manner substantially as and for the purposes described.

NAIL MACHINES—Daniel Dodge, of Keeseville, N. Y. I claim the use of the roller, F, the anvil, D, and the hammers, G G, constructed and operating substantially in the manner and for the purposes described, either in combination with the spring, L, or without it.

DESIGNS.

COOKING STOVES—Wm. Resor, of Cincinnati, Ohio. Two Designs.

Lake Phenomena.

During a thunder storm which took place at Oswego, N. Y., on the 4th inst., Lake Ontario suddenly rose to three feet above its usual hight, and as suddenly fell and rose again several times in succession. The vessels in Oswego harbor were tossed about like corks. This lake is subject to such phenomena. Sudden thunder storms appear to rise from its bosom and convulse its entire waters. Some have supposed that its bed was once the crater of a huge volcano, and that volcanic agencies are still at work beneath its blue waves.

The Great Yacht Race.

The Annual Regetta of the New York Yacht Club took place in the Bay on the 5th inst. and was the best ever witnessed. The breeze was stiff and constant, and brought out all the qualities of the several vessels for fair sailing, and beating against the wind. The first prize was won by the yacht *Julia*, and the second by the *Una*, both built by George Steers; thus adding to the already well-earned reputation of this young and eminent nautical architect.

A monument is about to be erected to Alex. Wilson, author of the first work on American ornithology, at his native place—Paisley, Scotland.

Within the past three weeks they have had unparalleled floods in Lincoln Co., Tennessee, many lives and much property having been destroyed.

(Our Foreign Correspondence.)

Venetian Glass.—How they make Beads.

VENICE, Italy, April, 1856.

Venetian glass has a world-wide reputation, and since I have been here, I have spent some time in endeavoring to discover the reason why glass, manufactured in this city, should be any better than that produced elsewhere. As yet, I have not ascertained anything satisfactory, but conclude it is principally the colors introduced that give to this glass the name and fame it has hitherto enjoyed. From a gentleman well acquainted with the glass trade, I learned that all the fine white crystal glass, used for decanters and table service, is imported into Venice from France and England, and that very little of the glass made here would compare with the manufactures of Germany and France.

Continuing my researches, I took an early opportunity of visiting some of the glass-works hereabouts, where the articles produced were beads, bugles, fancy plates, bottles, cups, saucers, &c., beautifully colored but wanting in clearness, full of blemishes and air bubbles. The plate glass works employ only a few hundred men, and turn out an article thicker and superior to our ordinary window glass, but of a yellowish tint, denoting anything but real excellence. The great renown that Venice has obtained for glass works is chiefly owing to the immense number of beads manufactured in its establishments. Having visited all the large factories here, I will endeavor to describe to you the process.

The materials are put into smaller furnaces than those used in America, but constructed upon the same principle, with contrivances for economising fuel, for which the Italians generally are celebrated. When the mass is sufficiently fused, the coloring pigment is thrown in, and mixed with the molten glass. When thoroughly amalgamated, the workman gathers a couple of pounds of the melted matter upon the end of an iron rod, which he withdraws from the furnace and manipulates upon an iron slab; after this, he plunges the glass into a tub of water. When it is sufficiently cooled, he sticks it into the furnace again, where it remains until once more melted, then it is taken out and fashioned into a shape resembling a bottle, with the bottom broken out. Another workman now brings on a similar lump, attached to another rod; the two are welded together; then a couple of boys take each one of the rods, and "travel," in opposite directions, to either end of a long shed. As these boys run away from each other, the glass is drawn out into long tubular wires, so to call them, and lies along on the ground, where it is suffered to remain until cooled; after which it is broken up in lengths or tubes, three feet long, and sold to the bead and bugle makers, (a distinct class of operatives;) or sent into other rooms of the same establishment, where workmen break them into minute particles.

This operation is performed by men, women, and boys—who have before them an iron gauge, into which, with one hand, they thrust fifteen or twenty tubes, at the same time, and, with an iron instrument (resembling a hatchet head) in the other hand, they rapidly chop off the ends of the tubes, according to the size adjusted on the gauge. These cuttings are then taken below, where they are put into an iron barrel along with some sand, and placed in a furnace over a pretty hot fire. A boy gives a revolving motion to the barrel, until the sharp edges of the choppings are sufficiently annealed, during which the speed of the rotary motion is progressively increased until the beads are properly shaped, when they are taken out of the barrel and polished, by being poured into bags and shaken from side to side by the force of two men—in the same manner that I have seen people, in this country, cleaning coffee and grain.

After polishing, the beads are sifted into sizes, and then some men, with light wooden trays, sort out the perfect specimens by a peculiar jerking motion, and slant which they dexterously give to the tray. The refuse is melted over again, and the now finished beads are put upon strings by a number of girls employed for that purpose. Various sizes are produced by larger or smaller tubes, as the case may be; but in all the operation is the same; the sifting process being necessary on account of the unevenness of the original tubes. The colors were very brilliant in some instances, but in all cases the glass seemed full of grits and blemishes, until toned down by the action of the fire in the second furnaces. Many large warehouses receive the beads, where they are packed away in boxes for exportation. In one warehouse I saw several hundred tuns of them, filling barrels and boxes, or strings of them piled away on shelves in compartments occupied by various colors. They were of all sizes, from the minutest mustard seed to the immense egg-like articles, exported to Africa and the Indies, for the use of the dusky beauties of those climes.

J. P. B.

Brakes to Fire Engines.

MESSRS. EDITORS—Fire engines that are to be used where hills have to be descended should be furnished with brakes of sufficient power to enable a small party of men to make any required descent without danger to themselves or the machine; for it often happens that when a fire alarm is given, only a small part of the company is present at starting. In this way life is often endangered, and a valuable engine may be put *hors du combat* at the moment when it is most needed.

For the want of such an appendage, one very strong and active young man was lately killed in this city by being run over, and his yoke fellow barely escaped, by the engine striking the curb-stone, and leaping completely over him. An alarm of fire had been given late at night, and the few men who first collected were endeavoring to take the engine—a heavy one—down a long hill near the engine house, as they had often done, but its velocity became so great that their force was insufficient to check it, and the men at the yoke fell, one of them being killed, while the other narrowly escaped.

The means for preventing such accidents are so simple, inexpensive, and so well-known to mechanics generally, that the non-application of them shows a lamentable disregard of life, safety, and property.

R. S. AVERY.

Washington, D. C.

Ascent of Balloons.

MESSRS. EDITORS—In the SCIENTIFIC AMERICAN of the 10th May, I noticed an article from J. Wise, calling in question my opinion relative to ballooning. I am aware that much lighter gases can be made than sub-carburetted hydrogen; I am also aware that any gas with which a balloon may be filled will expand, as the external pressure diminishes. The gas used for light should be carburetted hydrogen, of a specific gravity of nine to ten of the atmosphere, as sub-carburetted gas gives too blue a flame to be brilliant. Most of the gas I have seen burning must contain sulphuretted hydrogen, the flame being of a yellowish hue.

I remain of the same opinion expressed in my former article relative to the great elevations attained by aerial voyagers. Those who ascend elevated mountains find breathing to be very difficult at an elevation of twelve thousand feet, and by the time they ascend towards sixteen thousand, the blood, for want of external pressure, will find vent through the pores of the skin. How much higher, then, can human beings ascend and retain animal life with full possession of their mental faculties? WM. PARTRIDGE.

Binghamton, N. Y.

[California Correspondence.]

Ancient Ruins.—Coal.

MESSRS. EDITORS.—I recently had an opportunity of examining some ancient ruins, lately discovered, about six miles east of Santa Cruze. They were nearly buried up in a sand hill. I found twenty-three chimneys with their tops peering above ground. These chimneys are round, and vary in diameter from four to twelve inches. They are made of sandstone, and were filled up with loose red sand. The stones of which they are built are cut circular, and cemented together. I stamped on the hill and it emitted a hollow sound, indicating vaulted chambers below. A tunnel is now being run in under the hill; at first it was attempted to sink a deep shaft, but the sand came in too fast upon the miners.

Who built these structures no one can imagine. They appear to be thousands of years old. A large yellow pine tree was growing on the top of the hill. The number of years required for the sand to cover up these houses and form the hill, before the seed of this large tree germinated, could not be less than two thousand years.

In a number of the SCIENTIFIC AMERICAN, received by me in March, the discovery of coal near Stanton, in this State, is noticed. The discovery of the coal is a fact, but the quality is not so good as has been represented. I have a coal bed on the same range of mountains, about forty-five miles from Monterey. I discovered it on the 19th March, 1855, and have spent some money in prospecting the vein, which is but small, although the coal is of a good quality. I discovered a copper mine in Santa Clara in 1853, and I am part owner of a splendid soda spring, situated seven miles west of Santa Clara City. The waters of this spring have been found very effectual in curing diseases of the eye, and all skin eruptions.

Yours truly, ELISHA HUGHES.

Santa Clara, Cal., May, 1856.

Material for Roofing Buildings.

We have recently received a number of letters requesting information respecting a good and cheap material for roofing houses. One says:—"I wish to know how to prepare a cement for the roof of a house, as shingles are dear where I reside, and besides they are liable to take fire." Another says:—"I wish to be informed of a cheap fire-proof covering for a house with a flat roof, as tin roofing is too expensive in Texas, being fourteen dollars per hundred square feet; shingles are combustible, and will not answer. Any information respecting a good cheap fireproof material for roofs would be very acceptable to a large number of persons." Such is about the purport of all the letters we have received on the subject, and we will give such information as we possess in answer to these inquiries.

Slates, tiles, and tin make good fire-proof roofing, but they are too expensive for common houses. A cheap cement for common roofing—although not perfectly fire-proof—can be made of pitch, tar, oil, sand, and gravel, as follows: The roofing boards should be first covered with coarse thick paper, or, what is better, coarse cotton cloth, smoothly tacked down. Equal parts of tar and pitch are brought to a boiling point in a cauldron placed on the ground near the building to be roofed. A gallon of linseed oil to every thirty gallons of pitch and tar is then added, and stirred about, and then a quantity of clean fine sand is also added, and stirred up until the whole attains to the consistency of mortar. It is then lifted hot, in buckets, to the roof, and laid on in a thin stratum, the surface of which is thickly covered with dry sand, well pressed down with a spade. Piece by piece, a few yards at once, is thus put on, until the whole roof is covered. Three coatings of this kind—making about one inch thick—are laid upon the top of one another, and the whole is finished by very fine gravel and sand laid on the top of all, firmly pressed down, and the loose stuff swept off. This makes a good cheap roof, not liable to crack, and not liable to take fire from sparks like shingles.

It is a common practice with carpenters to use poor shaky boards for roofing. They seem to act upon the principle that, because they are to be covered up or hidden, any kind of lumber is good enough for this purpose. This is wrong on their part. The boards for roofing should all be of equal thickness, well matched at the edges, and closely driven together. If the roofing boards are not of equal thickness under a tin roof especially, it is scarcely possible to prevent it leaking, because there is always some unequal expansion of the boards, and this tends to rupture the joints.

Another cement roof, and one that is fireproof, can be made as follows:—The coarse cotton cloth to be laid under the cement should first be boiled in a solution of alum and sulphate of copper, and then dried. One pound of each is sufficient for a hundred yards of cloth. After the cloth is smoothly tacked down on the boards, a mortar of common lime mixed with hair as for priming, and containing about five per cent. of plaster of Paris is laid upon the cloth. When dry it is brushed over with boiled linseed oil, which is also suffered to dry. The second coat, and the last, is composed of a cement formed of slacked lime, freely exposed to the air for some weeks, sifted and mixed with dry sand, litharge, some calcined gypsum and linseed oil, and made into cement of such a consistency as can be laid on freely with a trowel. There should be equal parts of lime and sand, and about five per cent. of the litharge and burned gypsum. This cement should be laid on smooth, and about one-fourth of an inch thick, at least; but the thicker the better. The oil gives elasticity to the cement, prevents cracking, and repels moisture. The sand, litharge, lime, and plaster of Paris, (calcined gypsum) are fire-proof materials, and thus formed into a cement become very hard in the course of a few weeks. These cements are intended for what are termed flat roofs.

Blake's fire-proof paint mixed with oil, and laid on in successive coats, is said to make a good fire-proof roofing. Litharge, red lead, ground sand, chalk, and brick dust, mixed with oil, makes a good fire-proof paint; but the cheapest roofing material is the tar and pitch cement described.

Tin roofs are expensive, and what is worse, the generality of tin roofers around New York city are either careless or unskillful, for every high wind that blows is sure to strip off a number of such roofs. If sheet copper were as cheap, it would make a much better fire-proof roofing than tin. We have been informed that the roofs of thousands of houses in Russia are made of sheet iron coated with paint; and that they are durable and cheap, but this is probably owing to Russia iron being made on the spot, and sold at half its cost here.

It appears to us that sheet iron cut into plates, boiled in oil, and nailed lap-edged on smooth roofing boards, then coated with a thick paint of red lead mixed with sand, would make a cheap and durable fire-proof roof. We have also seen some fine specimens of cast iron plates or shingles, which we think will eventually be introduced extensively.

(For the Scientific American.)

Cowperthwaite's Patent Hydrant.

MESSRS EDITORS—Your remarks under the head of "Business with the Patent Office," though kindly intended, have, unfortunately, created a wrong impression upon the minds of my correspondents and others. They believe that my patent just granted is already sold. Such, however, is not the case. I have a number of offers, two of which fully reach the amount referred to, but involving points so unsatisfactory as to leave me, for the present, undecided; consequently, the patent is yet for sale, but if not soon disposed of, it will be withdrawn from the market in time to commence the manufacture of hydrants before the setting in of the cold season.

I have had my invention fitted and enclosed in a common wooden hydrant tree, and planted by the side of the old style of hydrant, for the express purpose of testing the two together, under like circumstances. The old hydrant—which was examined previous to the trial, and proved to be in good condition—was continually stopped and blocked up with ice. But my improvement never once refused the crystal stream when called upon. The form of valve is such as always to keep a close joint, no matter how much it may wear; it also gives an easy and quick exit to the back water, emptying completely the upper pipe. The whole arrangement, nozzle, as well as machinery, is completely enclosed from the external air, and freezing is evidently out of the question. Either the wooden or cast-iron tree can be used. No digging, cutting off pipes, re-soldering, or other troublesome or expensive repairs need be resorted to. The machinery can be easily and quickly taken out in a few minutes, by any person of ordinary abilities, repaired, and replaced again. The contrivance is simple, substantial, and in no way liable to get out of repair. The expense of manufacture is about that of the common hydrant. I have every reason to believe it the best contrivance for the purpose in existence. C. J. COWPERTHWAITE.

Philadelphia, Pa.

New Inventions.

Recent Foreign Inventions.

Great Cement Wash.—A patent has been obtained by J. B. Daines, London, for a cement solution for coating the surfaces of stone and plaster, and which appears to be excellent for this purpose. It consists of 8 parts, by weight, of linseed or other oil, in which 1 part, by weight, of the flour of sulphur is dissolved. The oil and sulphur are placed in a stone ware or iron vessel, and heated to about 270° in a sand bath, when the sulphur dissolves. It is laid on with a brush, and is stated to be a protective against damp. If it effects the object of protecting stone and plaster surfaces from damp, it is a most useful discovery.

Water-Proofing Oil.—A patent has also been obtained by Alex. Parkes, of Bury Port, Wales, for a preparation of oils similar in its nature to the improvement of Mr. Daines.—He treats oils with the chloride of sulphur, which changes their character, rendering them similar to vulcanized india rubber, and insoluble in mineral naphtha and sulphuret of carbon. He heats about 2 parts, by weight, of the chloride of sulphur with 8 parts, by weight, of oil, up to about 250°, when the combination of the two is effected. This vulcanized oil, it is stated, can be mixed with gutta percha or india rubber, to cheapen the manufactured articles made from these materials. This, apparently, is also an important invention.

Mr. Parkes has also taken out a patent for a varnish made of gun cotton dissolved in alcohol, or any solvent of gun cotton. This varnish is transparent, and he applies it to coat silk, sewing cotton, thread, leather, plaster, wood, &c., to render them water-proof. As gun cotton dissolved in chloroform is a well-known varnish, we are at a loss to conceive how Mr. Parkes' varnish can be considered a new invention.

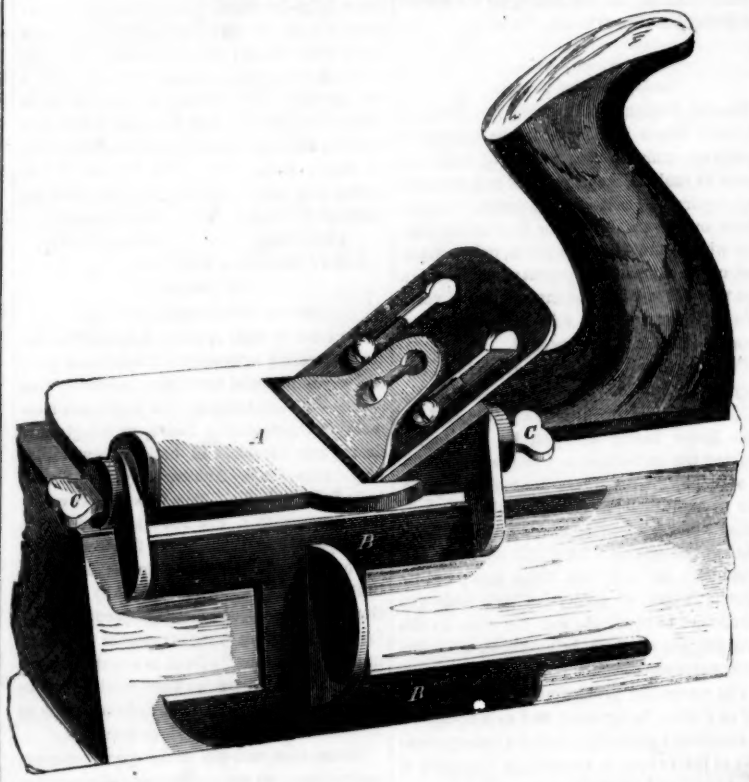
A Choking and Blinding Bridle for Fiery Horses.—A patent has been secured by A. E. & C. L. Guillemere, London, for an effectual method of taking the wind out of a runaway horse. Two goggles are adjusted to rods connected with the bridle, also two plates on the ends of bars, connected with the bridle—the goggles to close the eyes, and the plates to close the nostrils of a fiery horse when he runs away, by simply pulling a thong connected with the reins. This invention is a genuine eye-closer and wind-stopper, and will certainly bring the most fiery "Rosinante to a dead stand-still in a twinkling. The eye goggles are an old French invention, and the nostril-closers are a recent American invention; Messrs. Gullimere have combined these two inventions, and have produced an apparatus, which, with the addition of another simple device applied to the horse's rear, which we choose not to name, would render it perfect.

Improved Fertilizer.—R. P. Forlong, of Bristol, Eng., has patented a new manufacture of manure, which is stated not only to be a fertilizer, but capable of protecting the young shoots of plants from the turnip fly, and vermin. The patentee takes bone dust and the flour of sulphur, and mixes them together in equal quantities, by weight. He then subjects them to just such a heat in a furnace as will fuse the sulphur, and cause a thorough combination of the materials. When this effect is obtained, he removes the compound and sets it aside to cool and solidify. After this it is ground fine between a pair of burr stones. The richness of this fertilizer is reduced for use by mixing it with an equal weight of gypsum. It is applied in the usual way—like guano. From this description, any farmer who has a small grinding mill will be able to make this new fertilizer, and give it a fair trial.

Shirts.—Henry Woodron, of London, has taken it into his head to institute a radical reform in shirt-making, and has taken out a patent for his invention. From time immemorial the sleeves of shirts have only been made of such a length as to terminate below the shoulder, and it requires a shoulder strap to unite them with the collar. He cuts the sleeves in such a manner that the tops of them reach to, and are sewed to the collar-band direct, and thus he dispenses with the common shoulder straps. He also removes another ancient shirt land-mark, by making them in such a manner that they can be put on and taken off like a coat. The bosom is buttoned at the one side, which is not a new idea.

Rice Starch.—T. Roberts and J. Dale, of Manchester, Eng., have secured a patent for mnnufacturing rice starch without the use of an alkali to separate the gluten, as has been the previous practice, in rice starch making. They take rice in the grain, but do not grind it in the usual way. They first wash and soak it in water until it is quite soft, and then grind it into a meal paste. It is then placed in heaps until it heats and ferments, by which action the gluten and starch are separated. When boiled in water the mass yields a paste equal in quality to common rice starch.

IMPROVED BEVEL PLANE.



Improved Bevel Plane.

Our cut shows an improvement in carpenter's planes for use on bevel work, patented by Mr. Jacob Devoe, No. 5 Sixth Avenue, New York City.

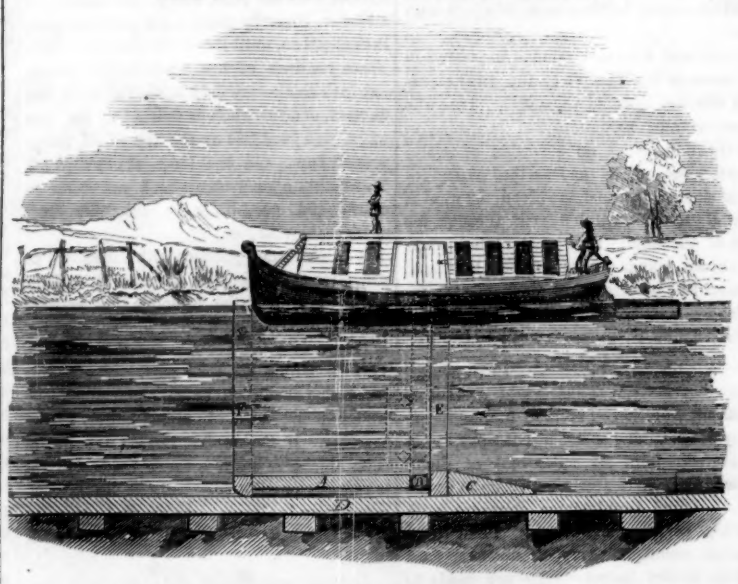
The face or stock of the plane, A, is composed of a metal plate, broader in front than behind; the rear part is just wide enough to fit the bottom part of the handle. The cutting irons are arranged in the usual manner.

The improvement consists in the adjustable leaf, B, which is attached and set to a given angle by means of the thumb screws, C C. Whenever it is desired to plane the stuff on a bevel, or to change the bevel, it is only necessary to alter the position of leaf, B. The use of a square is thus dispensed with, and much time saved.

Bevel planes are generally encumbered with hinges, screws, and circular slots, rendering them inconvenient in use, expensive in manufacture, &c. But this improvement is perfectly simple, easily made, and instantly altered.

The advantage of the metallic stock over wood, for certain species of work, is known to all carpenters. Address or apply to the inventor for further information.

IMPROVEMENT IN TIDE GATES.



New Tidal Flood Gate.

In many parts of the country, especially on the sea-board, advantage is taken of the rise and fall of tides to obtain an economical motive power for grinding grain, and other purposes. Creeks are generally selected, across which dams are thrown, having self-acting flood gates so arranged that when the tide rises the water enters behind the dam; but when the tide falls the gates close, and a pond or reservoir of water is obtained to drive the wheel.

The tidal gates commonly used are, for the most part, hinged at the top or on the sides. Hinged at the top they are objectionable, because they require a log or beam to be thrown across the sluice, and thus all navigation of the creek is cut off. Drift stuff and ice also collect against the gate, and create much trouble.

Gates hinged at the sides are objectionable, because, after a short time, they sag, and bear on the bottom of the flume, and become inoperative. The ice, also, collects near their upper hinges, and occasionally damages them.

The improvement illustated in our cut consists in hinging the gate at the bottom, so that when the tide rises the gate falls flat on its face, and leaves the creek open and clear for navigation.

A is the gate, hinged at B to the block C on the bottom of the flume, D. The water running in direction of the arrow keeps the gate down. When the current changes, the gate will rise by its own buoyancy into the perpendicular position indicated by A′, and the dotted lines. E is a cleat, to support the gate when raised upright and pressed by the tide. F is a button for holding down the gate when desired.

This gate is said to cost only about one-half as much as the ordinary kind, is not liable to leak, is less obstructed by ice, leaves navigation free, &c.

It may be used to great advantage as a back or guard gate, being, in such case, operated by windlass and chain. It may also be employed, in the same manner, for the upper gate of canal locks. In all cases it may be operated quickly and easily.

This invention was patented April 8th, 1856, by Mr. George W. Flanders, Lynn, Mass., from whom further information can be obtained.

Engravings.

Messrs. Editors—Having recently patented a valuable improvement in steam engines, I desire to have my invention illustrated in the Scientific American. But I am ignorant of the method of procedure in such cases. How much do you charge for publishing engravings? E. E.

In reply to our correspondent and to hundreds of other inquirers upon the same subject, we would state that engravings of new inventions are published in the Scientific American *free of charge*. Our columns are at all times open to the circulation of intelligence concerning improvements; and if those who are interested in such things fail to avail themselves of the opportunity it is their own fault.

All we require is that patentees shall furnish the cuts at their own cost, that they shall be new, well done, properly lettered, and so drawn as to show the invention clearly, and of proper size.

We have, undoubtedly, better facilities for getting up mechanical engravings than any concern in the country, for we keep a corps of designers and engravers whose sole business it is to draw and engrave machinery. Inventors will, therefore, find it to their interest to employ our artists when they can, as they will then be sure of having their work executed in the most artistic manner, and under our own supervision.

Our charge for such work will be as low as any, of equal workmanship, and when done will be sure to answer our requirements for publishing.

Second-hand engravings are never published in the Scientific American; nor are inventions illustrated in our columns which have been published in other journals; therefore the reader is always assured, as they behold the engravings and read the descriptions, that they have something new.

Engravings of stoves we ignore from our columns entirely, unless they contain some feature entirely different from what already exists, which few at the present day do.

Our paper enjoys a very wide circulation, being, probably, read every week by not less than one hundred thousand persons, and is, beyond all doubt, the best medium extant for bringing new inventions before the public.

Prof. Morse, the inventor of the American Electro Magnetic Telegraph, left this city on a visit to Europe, on Saturday last week? It is stated that he visits Europe to assist in some experiments in submarine telegraphing.

Scientific American.

NEW-YORK, JUNE 14, 1856.

Telegraph Improvements.

On the evening of the 4th instant, a severe thunder storm prevailed for some hours in the region of New York City, and extended far eastward, along the Atlantic seaboard. Its influence paralyzed all the telegraphs, and suspended intercourse on those highways of thought—the wire conductors. In the midst of the storm, the steamer *Niagara*, from Liverpool, arrived at Halifax, but the wires failed to convey the intelligence which she brought. It had been stated in a number of the daily papers that Hughes' new telegraph would be able to operate in such storms when all other telegraphs failed. This was stated to be one of its new and superior qualities, and certainly, if it possessed such, its value could not be over-estimated. We were informed that this telegraph had been put on a line between New York and Boston two weeks ago, and surely there never was a finer opportunity of showing its superiority over others than on the evening named. Why it did not, or could not operate, we have not been informed, but we are confident that without perfect insulation and protection of the conductors, neither the Hughes nor any other telegraph apparatus can operate during thunder storms. It is not the machines, but the wires which now cause the greatest trouble to our telegraph companies and the public, and it is to this feature in telegraphic operations that we wish to direct attention.

There is much that is mysterious in the nature of electricity. The common way of explaining its action on a telegraph line, is by comparing it to water flowing through a tube—hence the current is generally called an electric *fluid*, and the wire a conduit or conductor. But electricity is not a fluid according to the usual meaning of that term; and its action is totally different from water flowing through a tube. A copper wire covered with silk, and wrapped in numerous convolutions around a piece of soft iron, exerts such a peculiar influence upon the iron, as makes the latter capable of drawing or attracting heavy metallic bodies towards it. It naturally would be supposed that, as the wire was covered with silk (which is a non-conducting substance,) that the electricity would pass onward and exert no influence upon the iron—but such is not the case. It is therefore totally different in its nature from any known fluid; it exerts an influence of a peculiar character through and outside of the covering of its wire or conductor, and it is also affected by like influences, outside of its conductor, such as atmospheric electricity, during thunder storms. The wires of our electric telegraphs, therefore, when exposed, as they now are, will always be subject to the counter action of atmospheric electricity, and thus oftentimes rendered incapable of operation, no matter whether the Hughes or any other telegraphic machine be employed in transmitting messages. Atmospheric electricity (lightning) is oftentimes so intense, also, that it takes possession of the wires of a line, vaults along them, and enters the offices, where it melts and injures all interposing connections and apparatus. This is a difficulty connected with telegraphic operations, for which perfect insulation—not the machine—appears to be the only *sure* remedy. Telegraphic interruptions, so common at certain seasons of the year, are great drawbacks to the usefulness of this great modern invention. How tantalizing to the feelings of the public, and to men in business, when waiting with anxiety for a deeply important message passing on the wires, to be informed of the suspension of the communication by some sudden thunder storm passing over a section of the line. Such interruptions are not unfrequent, and are of no minor importance. No efforts should be spared to prevent them; no efforts should be spared to render the telegraph perfectly reliable in its operations under all circumstances, but this never can be effected without perfect insulation and protection of the conductors. To such improvements for perfecting telegraphing—this great modern improvement in communicating rapidly between distant places—intense application should now be directed.

Notes on Ancient and Curious Inventions.—No. 9.

Preserving Timber.—Wood is unfit for building purposes, especially ships, in the state in which it is felled, for if placed in a confined situation, the humid nitrogenized matter in the sap soon decomposes, and induces rapid decay. Timber, therefore, should have its sap dried, removed, or changed, before it is finally applied for building purposes.

The ordinary method of seasoning wood consists in exposing it to a free current of air, the wood being in the form of planks, boards, logs, or scantling. If the pieces are thin, like boards, six months' exposure in a dry situation will complete the desication for houses, but thick pieces, like beams, sills, &c., require a much longer period, and the closer the grain of the wood the longer is the time required. Oak logs, two or three feet in diameter, require five or six years to season thoroughly. The exposure ought to be continued until the wood ceases to lose weight by evaporation. In all shipbuilding establishments logs may be seen lying about for years, waiting until they are fully seasoned.

The seasoning of thick logs is better effected, and sooner, by exposing them for some weeks in a running stream of water, to wash out the sap; or by boiling them in water in long tanks.

In 1825, a patent was taken out in England for drying wood in vacuo, and under heat. The timber was placed in a long air-tight iron cylinder connected with an exhausting pump, and when all the air was exhausted the cylinder was heated by steam, and all the moisture of the wood driven off.

The amount of moisture contained in green wood varies according to the closeness of its grain, from five up to forty-five per cent. of its weight; and it is never fully expelled in any timber that is dried in the open air. The seasoning of timber by dry steam, appears to us to be the best method of desication; and for timber only requiring to be thoroughly dried (as all timber should be) for house building, we recommend it as the best and most simple method. Every saw mill in our country should have its steam-drying house, in which boards, planks, and scantling should be thoroughly dried before sent to market.

The nitrogenized matter in the sap of wood is the cause of its rapid decay,—it is called vegetable albumen. In its nature it is similar to animal albumen, which is very putrescent in its nature, when exposed to low heat and moisture. To preserve wood thoroughly, this albumen must be removed, thoroughly dried, coagulated, or changed in its nature by combining it in the wood with some solution that will alter its chemical nature. Common seasoning dries the sap of the wood; and if the wood be kept from moisture in a dry situation, and exposed to a free circulation of air, as in a dry building, it will endure for thousands of years. We have seen timber eight hundred years old, and it was as fresh and strong as the day it was put into an old cathedral. But the choice of a dry situation for wood, and a free circulation of air cannot always be obtained; therefore, if wood can be so treated to endure for a long time in any situation, the method of so treating it should be more generally known. It can be so treated.

If the albumen is removed from wood before it is applied for building purposes, it will not be found so liable to decay. It can be washed and boiled out, but when removed, the fiber of the wood is greatly weakened. When all the strength of the timber is desired to be retained the albumen, therefore, must not be removed. It can be retained and coagulated by a heat of 230°, and steam heat is the best for this purpose. But, if some of the strength of the timber can be dispensed with, the albumen may be washed out by placing logs in a running stream of water, for three weeks, with their butt ends up stream. After this they may be sawed up into boards, and seasoned by exposure in the open atmosphere.

The application of varnish to the outside of timber, to protect it from the influence of the moist atmosphere, has long been known and practised for the preservation of timber, but unless wood is perfectly sap dried before varnish or paint is applied, its decay will be hastened, not prevented.

The greatest efforts of men of science and inventors have been directed to the preservation of wood by chemical processes, to change the nature of its albumen. Various antiseptic substances have been employed for this purpose. The process called "kyanizing," consists in treating timber with the chloride of mercury (corrosive sublimate.) In solution it combines with the sap of the wood and forms an insoluble compound, not susceptible of fermentation and spontaneous combustion. This substance effects the same result when applied to animal albumen. It is employed, therefore, by aviarians for preserving birds, insects, &c. The wood sawed in blocks or planks, is soaked for seven or eight hours in tanks containing a solution made up of one pound of corrosive sublimate to every five gallons of water. The impregnation can be effected in open tanks by sinking the wood, or in close tanks, where the air can be extracted by an air pump, and the solution allowed to flow in. This is a very good process, but it is expensive, and besides it is a dangerous solution for those engaged in the operations.—Another good substance for preserving wood by combining with its albumen and forming an insoluble compound, is the sulphate of copper (blue vitriol.) It is applied in solution about the same strength and in the same manner. The sulphate of zinc (white copperas) is also a good solution for the same purpose. About two quarts of crude pyroligneous acid added to every gallon of the sulphate of copper solution, improves its preservative qualities. Lime has been patented for preserving wood, but it injures the fiber of the timber. Alum in solution has also been tried, but while it counteracts the decomposition of the albuminous matter, it acts injuriously upon the fiber of the wood, and impairs its strength. Common salt is a preservative of timber, for it is an antiseptic, and it has been extensively used in the preservation of the timber of New York ships. The ships built on the shores of the Baltic Sea, always endeavor to make their first voyage with a cargo of salt. For preserving house timber, owing to the deliquescent nature of common salt, it is unfit to use, but this is owing to that impurity—chloride of calcium—in the salt, for pure salt (chloride of sodium) is not very deliquescent in its nature. If, then, it could be obtained easily and cheap, we would recommend that much of the timber for building purposes, such as for bridges, &c., be impregnated in a solution of it. We have been given to understand that *pure* salt is now manufactured in considerable quantities at Syracuse, N. Y. Live-oak, used for ship-building, is impregnated with salt to render it preservative; the best Turk's Island, we understand, being used for this purpose.

Oils are also preservatives of wood; and the whaling ships are evidences of its virtues. They seem to be proof against decay. Hot oil has been experimented with in impregnating wood, but while it rendered it more durable, it injured the tenacity of the fibers. From the well-known preservative nature of arsenic, it would be effectual for preserving timber, but its use is so dangerous that we cannot recommend it. Timber impregnated with a solution of tannin, is rendered preservative, by the tannin combining with the albumen, and forming an insoluble compound, in the same manner that leather is produced by the combination of the tannin with the gelatin of skins. Oak trees have been preserved fresh in peat bogs for thousands of years. Creosote is an excellent preservative of wood, and the efficacy of common tar, for this purpose, is attributed to the creosote it contains. The boiling of timber in wood tar, renders it highly preservative, but it impairs its strength. About two gallons of creosote to every 100 gallons of water, makes a sufficiently strong solution for use.

Burnet's process for preserving wood, consists in the use of a chloride of zinc solution—one pound to every five gallons of water. It is applied in the same manner as the corrosive sublimate described. For ship timber it is much superior to corrosive sublimate, because the compound it forms with the albumen of the wood is insoluble in salt water; which is not the case with the mercury compound. A solution of this substance is also excellent for preserving the canvas of sails and awnings, and is now much used for this purpose. The canvas is first steeped for two hours in a liquid of this chloride zinc of a strength of 3° by a hydrometer, then taken out, dripped, well washed, and dried. It is made by dissolving clean strips of zinc in muriatic acid; this is reduced for use by the addition of soft water. The chloride of zinc and the sulphate of copper, are the most simple and best preservatives, considering the cost.—The former is the best, the latter the most convenient for common use. We therefore recommend these substances in preference to all others. Shingles for the roofs of houses, boiled in a solution of the sulphate of copper or pure salt, will last many years longer than they otherwise would.

Recent American Patents.

Machine for Husking Corn.—By Oren Stoddart, of Busti, N. Y.—The ears of corn are pushed down by an attendant between a pair of rollers having raised stumps of rubber upon them. The rollers rotate in a direction contrary to that in which the ears are pushed and serve to strip off the husk. The butt, or stalk part of the ear, is cut off by means of a knife, which comes in play as soon as the ear passes the rollers. The husks are discharged at one place, and the clean ears at another.

Preventing Damage from Water.—By Thos. Estlack, Philadelphia, Pa.—Great damage to goods often ensues from the flooding of stores and warehouses with water in cases of fire.—This improvement consists in placing the floors of buildings on a slight incline, and providing the lower side of each floor with a trough connecting with a common leading pipe, which extends down to the pavement. If the floors are at any time flooded, the water at once runs off into the trough and escapes to the street without doing injury.

Improvement in Harvesters.—By A. B. Wilson, of Waterbury, Conn.—In this improvement the cutters are all pivoted and cut, like the knives of a straw cutter, against hide, or other suitable material. There is also a peculiar arrangement for driving the cutters, varying their hight from the ground, etc.

Oil Gas Apparatus.—By S. H. and M. C Walker, Lancaster, Pa.—Brilliant illuminating gas for lighting dwellings, stores, factories, and churches, may be made without difficulty from common oil. The apparatus and the process are quite simple. A heated retort is provided, the oil is introduced at the top or roof, and falls, drop by drop, upon the bottom. Contact with the heated metal converts it almost instantly into gas. But the oil leaves a slight residium, which is liable to collect on the spot where it falls, and, after a time, impedes the operation. The retort must then be opened and the residum scraped off.

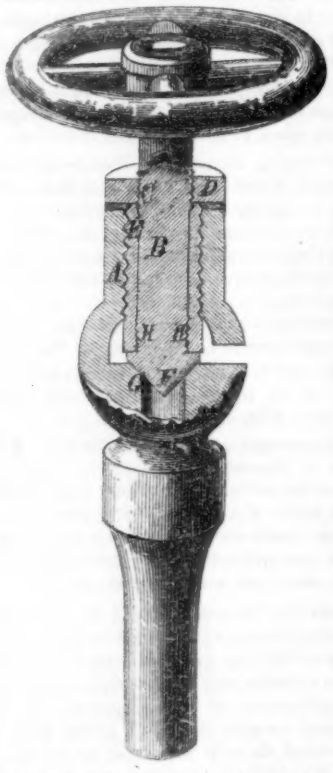
The object of the present improvement is to provide a means of scraping away and removing the substance named without opening the retort. This is done by having a receptacle or pocket at one end of the retort and a scraper within. The handle of the scraper passes out through a small aperture in front of the retort. The operator moves the scraper as often as necessary, and pushes the stuff into the pocket. When not in use the handle may be unscrewed, the scraper left within, and the aperture tightly closed. Oil gas is very extensively manufactured in various parts of our country. The above improvement greatly facilitates its production.

Improvement in Steam Slide Valves.—By William Burdon, of Brooklyn, opposite New York.—This invention consists in a hollow cylinder placed within the steam chest and supported upon wheels, to run on the valve seat or on suitable ways when the steam chest is parallel therewith; said cylinder is arranged with its axis perpendicular to the valve seat, and is open at the end next the valve seat to receive a piston attached to the valve. It is closed at the opposite end. This piston is of such size as only to leave a portion of the valve exposed to the pressure of the steam, said portion being of an area sufficent to re-

ceive the amount of pressure requisite to confine the valve to its seat. The valve being fitted steam tight to the cylinder causes the unnecessary pressure that would come upon it to be received by the head of the cylinder, and transmitted thereby to the wheels which roll upon the seat or ways. The movement of the valve is, in nearly all engines, attended with great friction, but by this improvement it is almost entirely destroyed.

Improvement in Melodeons.—By Josiah A. Rollins, of Buffalo, N. Y.—The principal object of this invention is to arrange within the instrument four sets of reeds, and to combine two sets of valves to be played by one set of keys, yet keeping all the reeds on one tube board. The construction of the instrument is thus rendered simpler than when the reeds are arranged in two banks, while at the same time the depth or width of the case of the four-reed instrument is not any greater than that of the ordinary melodeon. Instruments of this improved description possess, in effect, quadrupled musical powers.

Improved Valve Gauge Cock.—These cocks are used for steam boilers and many other uses where it is necessary that cocks should be tight when new, and capable of being easily re-ground when they become leaky.



Referring to the above engraving, the improvement consists in having an outer shell, E, shipped over the spindle, B, and fastened as shown, at the screw threads, H H, and further secured by a flat nut, D, screwed hard against the end of shell E, at the thread, C. By turning back the hand wheel, the valve, F, is opened, or run back from the seat, G, allowing the steam or water to pass out through the opening below; the part, I, should be six-sided.

To re-grind this gauge cock, it is only necessary to run the spindle and shell out of the body, A, and slack back the nut, D, unscrew the shell at H H, and the spindle and valve is free to revolve, can be ground with emery, &c.; after this, replace the parts again, and the cock is as good as new. This is a good improvement. Patented Jan. 15th, 1856, by McNab, Carr & Co., No. 133 Mercer st., New York City.

Improvement in Window Frames.—By John Casey, of New York City.—This invention consists in having a portion of one of the side pieces or stiles of the window casing movable, so that the sashes may be conveniently removed from the pane for washing or repair without detaching any portion of the beads or molding. The improvement may be applied to all windows.

Washing Machine.—By Solon Bishop, of Homer, N. Y.—Consists of a tub containing a round rubbing board, between which and the bottom of the tub the clothes to be cleaned are placed. A yoke or bar is placed upon the upper end of a central spindle, and arranged so that the rubbing disk will have a proper bearing at whatever hight it may be varied within the tub or case.

Improvement in Bench Retorts.—By John G. Hock, of Newark, N. J.—In gas making it is common to heat five retorts with one fire.—Each set of five retorts thus arranged is called a "Bench." The present method of heating is defective, for the flame is suffered to curl around the retorts and strike with greater intensity upon their top parts. This soon burns through, and they are useless.

The above improvement consists in a novel arrangement of flues, whereby the flame and heated products of combustion are made to act on the retorts in such a manner as to heat them with a greater degree of uniformity than they can be by the common method. The durability of the retorts is thus increased, and a considerable saving in fuel also effected.

Saw for Cutting Irregular Forms.—By Henry S. Vrooman, of Logansport, Ind.—Consists in a peculiar manner of hanging the saw sashes, adjusting the same, and also a new method of arranging the saws in the sashes so that the saws may, by the aid of patterns, be made to cut all kinds of stuff, timber in curved or irregular forms, for various purposes.

The Press on the New Patent Bill.

The *Pen and Lever*, published at Washington, D. C., contains an able review of the new Patent Bill, in which exceptions are taken to nearly every section contained in it. We wish we were able to present the whole of this review, but we can only find room for a few extracts.

Respecting the enormous increase of new fees proposed, it says:—

"We do not see how any unprejudiced person can read the list of fees and avoid the conviction that it is calculated to make the Patent Office a commodious crib for feeding an enlarged herd of office-holders at the expense of inventive dupes, rather than to promote the useful arts, by encouraging inventors. Hitherto, by charging patentees thirty dollars, and rejected applicants ten dollars, the Office has been able, not only to pay its own expenses, but to accumulate a surplus of a few hundred thousand dollars. But this bill, without guaranteeing the inventor any superior advantages or privileges, will raise the official fees for every patent to a sum never less than $130, and sometimes as high as four or five hundred dollars. For instance, last year, a patent was granted embracing sixteen claims. If that patent had been appealed, first to the Commissioner, and then from him, under this proposed system, the expense of the patent, in Office fees alone, would have been not less than $425. Now what is the object in extorting so much money from the inventor? Certainly, if the Office is properly administered, but a small portion of such exhorbitant fees can be required to pay its expenses."

Regarding the increased rate of fees for copying, it says:—

"Again, the fees for copying are proposed to be raised from ten to fifteen cents per hundred words. At the present rate, of ten cents a hundred words, an experienced copyist can earn from seventy-five cents to a dollar an hour, and cannot work the full number of official hours, lest his earnings would amount to more than a regular salary paid to clerks of a similar grade. For whose benefit, then, is this increased cost of copying intended? In addition to the succession of superfluous payments required to be wrung from the poor inventor, a pittance of twenty-five cents for each hundred words which the specification may contain more than one thousand words, is to be charged to the patentee for engrossing his patent."

On that wonderful feature of the bill to which we specially directed attention—the solemn *confirming act*—it is both sharp and severe. It says:—

"But the most important and objectionable section of the bill is that which requires the "confirmation" of a patent within five years, or else the patent shall terminate. Instead of the term of fourteen years originally, and an extension of seven years, as the law now allows, the bill provides that the patent shall originally be granted for only five years. And before the expiration of that period, if the inventor would extend the duration of his patent, he must make application to that effect, paying a fee of one hundred dollars.

"The objections to this plan are so numerous we can hardly enumerate them. It would be a complete death-blow to the inventive spirit of our country. Any one can in a moment see that none but the wealthy and the pirate would ever succeed in having a patent confirmed, if of any use or consequence. The poor inventors would be debarred at once from extending it, from their inability to raise and risk large fees. The consequence would be that they would never attempt to obtain the patent originally, for they would, of course, know that they could not sell an invention till after the patent should be confirmed, since not one patent in a hundred could be sold for any amount, in view of the uncertainty, delay, and expense of confirmation. Hence, the spirit of invention would almost entirely die away, unless the law should be promptly repealed. The applications for patents would soon dwindle down to the few which wealthy owners of inventions might think it worth their while to attempt to secure.

The delay consequent on this plan would debar most of the very few who would otherwise risk the poor chance of confirmation. For, as the first five years of the patent would be worse than useless—a perfect purgatory to the inventor, most inventors would give up the invention in despair.

In general, we dislike its whole plan and spirit—it requires heavy fees, for no earthly object, except to overburden the inventor, and oppose obstacles, instead of offering encouragement to improvement; it causes long delays, which are an oppressive burden even when protracted but a few months; it requires a succession of troublesome and complicated procedings, which are a complete horror to inventors; it supposes the poor inventor always to have the poorest invention, for its professed object is to prevent the prevalence of useless or unused inventions, and it is generally the poverty of the inventor, and not the uselessness of his invention which prevents its coming into use, while the really worthless invention, more generally, has wealth to support it, for sinister purposes; in short, not content with the difficulties and obstacles with which the Patent Office takes such especial pains now to entangle the inventor, under the present law, and of which inventors are so loudly complaining, all over the country, it ingeniously weaves other webs to entrap the last innocent victim.

If we cannot have a better patent law, let us retain the present."

The *Kane County Republican*, published at Geneva, Ill., says, respecting the Bill, "From an examination of some of the amendments we are fully convinced that certain interested parties are at the bottom of the whole affair. We hope for the good of the country it will not pass."

The *Recorder* of Amsterdam, N. Y., says: "It is the opinion of many who have carefully examined the Bill, that it contains some features which will assume an ugly appearance when brought out into practical light, and will open the door to fraud and oppression a hundred times wider than the present system. Two objectionable features are quite obvious. It greatly increases the difficulty with persons of small means in obtaining patents, and it increases the power and patronage of government."

The Savannah, Ga., *Morning News* says:—"Perhaps the strongest argument against any radical change may be found in the fact, that hitherto our patent system has been considered the most simple and perfect in the world, and has been a model for England and other nations."

The *Jefferson County News*, of Adams, N. Y., says: "The Bill seems to be most admirably designed to benefit other interests than what ostensibly appears on its face, and in one section authorizes the Commissioner to expend $400 for printing copies of descriptions, specifications, &c., of every patent, which would amount to a million of dollars in a single year."

Since the Bill has been published in the Scientific American and our brethren of the Press have had an opportunity of examining it for themselves, they have very unanimously condemned it.

Who first employed Anthracite Coal in Smelting Iron.

In a recent article in the New York *Tribune*, on the progress of iron manufacturing, it was stated that there was a dispute respecting who was the first to apply anthracite coal in the smelting of iron, and the names of George Crane, of England, and Rev. Dr. Geissenhainer, of New York, were mentioned in connection with the subject, and the credit given to the latter. In the *Tribune* of the 5th inst., F. W. Geissenhainer, Jr., claims the invention exclusively for the Rev. Dr. Geissenhainer, and states that he obtained a patent for melting iron ore with the hot blast, by anthracite coal, and obtained a patent in 1833, and that in 1835 a furnace was erected in Schuylkill Co., Pa., to carry out the invention. He says, "iron manufactured in that furnace being now in my possession—the first either in this or any other country, manufactured by the exclusive use of anthracite coal by means of a chemical combination and a hot blast." By the tone of the whole letter it would appear as if it were the intention of its author to convey the idea that Dr. Geissenhainer was the first person who applied anthracite coal, exclusively, to smelting iron. He also states that Mr. Crane, of London, afterwards applied for an American patent, which was opposed by Dr. G., but he paid the latter a thousand dollars for the use of his invention, and afterwards took out a patent. We will now quote the remainder of the letter:—

"Immediately after this purchase and the establishment of the validity and priority of the patent, the executors of Dr. Geissenhainer freely opened to the world the use of his patented discovery, and hence it is that all the iron furnaces in the State of Pennsylvania have been erected free of patent charges or fees."

Now, instead of Dr. Geissenhainer being the first who used and successfully smelted iron ore with anthracite coal, his patent dates five years later than Benjamin B. Howell's of Philadelphia, who had erected a furnace as early as November, 1828, and manufactured malleable iron from the ore by the *exclusive use* of anthracite coal for fuel. The Rev. Dr. Geissenhainer was neither the first to use anthracite coal in smelting iron ore; nor was he the inventor of the hot blast. It was very easy for his executors to be generous in giving his patent to the public. "Honor to whom honor is due," and the person who deserves credit for the first successful application of anthracite coal to the manufacture of iron, from the ore, is Benjamin B. Howell, of Philadelphia.

Curious Instinct of Plants.

Hoare, in his treatise on the vine, gives a striking exemplification of the instinct of plants. A bone was placed in the strong but dry clay of a vine border. The vine sent out a leading or tap-root, directly through the clay to the bone. In its passage through the clay the main root threw out no fibers; but when it reached the bone, it entirely covered it, by degrees, with the most delicate and minute fibers, like lace, each one sucking a pore in the bone. On this luscious morsel of a marrow bone would the vine continue to feed as long as any nutriment remained to be extracted.

American Steamboat Engines for the Danube.

Engines are now in the course of construction at the Morgan Works, this city, for two light steamboats designed to run on the lower Danube. They are to be sent to Austria to be put in boats building at Alt Afen, from designs by George Steers. These engines are being constructed under the supervision of Charles F. Loosey, Esq., the efficient Austrian Consul General at this port. They are to be steam apostles of American progress.

Perpetual Almanac.

Mr. Wm. Hillhouse, of New Haven, Conn., has shown us a small cylindrical Almanac, of his own inventing, which, by slight changes, is made to exhibit the days and months of any year, past, present, or to come for a thousand years or more. It is a simple instrument.

TO CORRESPONDENTS.

C. C., of Mass.—Your statements in regard to the discovery of the daguerreotype are founded in error. The following explanation will enable you to see how much credit is due to each of the distinguished names associated with it. Niepce ascertained that when a surface was covered with resin and exposed to the solar rays, the portion on which the bright light fell became much more soluble than those parts which had been influenced by the weaker rays, and could, consequently, be dissolved off before the other portion; thus an imperfect picture could be formed. Daguerre ascertained that several compounds of silver were most easily affected by the action of the light; those parts upon which the light fell brightly being quickly decomposed, while those portions protected by the shadow remained untouched. He also discovered a method of fixing the image thus drawn. Niepce has done much to advance the photographic science, and is entitled to much credit, but not to all.

J. G., of Ill.—Your theory of anchor ice may be correct, but other views on the same subject have also been maintained with apparently good proof, and were published in back numbers of the Sci. Am.

M. D., of Ind.—The tube of two feet in diameter to burst the cask must be just as high as one of an inch in diameter—the pressure is according to the hight, not the diameter.

S. H. H., of Ohio—You can use the vulcanized india rubber for any kind of valves. The method of manufacturing it is secured by patent.

C. W., of Va.—There are instruments for testing the draft of plows; but we are not acquainted with any person who manufactures them.

M. B., of N. Y.—It makes no difference where you bel off from the main shaft; you will require the same amount of power to drive the run of stones; let the belt be put on at the middle or end of the shaft.

A. M., of N. J.—Your patent fee will be $300 unless you have resided one year in the United States, and declared your intention of becoming a citizen. In that case the fee will be the same as that of a citizen. If your invention is so valuable it will not be easy for you to keep it secret.

Ball, Aultman & Co., Canton, O., saw last fall an account somewhere of a mowing match to come off some time the coming harvest in the State of Massachusetts, at which $1,000 were offered as a premium for the best mower. If there is to be such a trial they want to attend it, with a machine. They wish information on the subject.

I. V., of Ohio—The subscription price of the American Journal of Science and Art is $5. Messrs. Putnam & Co are at No. 321 Broadway.

P. Lancaster, Le Clair, Mich., wishes to correspond with a manufacturer of malleable castings. He also wishes to get some Remington gun barrels.

W. O. H., of Tenn.—A well constructed wooden model will answer as well as a metal one. We answered your inquries about the wind engine by letter a few days since.

W. M. C., of Tenn.—Benzole is dearer than coal gas made in our cities. The cost of the apparatus can be obtained by writing to A. M. Mace, Springfield, Mass.

J. H. C., of Ohio.—Use shellac dissolved in alcohol with your plaster of paris, for cementing the metallic ring; this will make it air-tight, and may answer your purpose.

Isaac W. Lewis, of Greensburg, Md., wishes to purchase a flour barrel stave machine.

L. M. C., of Boston.—Correspondents who refuse to sign their names to their letters are not entitled to any attention, and will not receive any at our hands.

J. S., of N. Y.—You did not read the note on making cement roofs carefully.

G. T., of Iowa—We do not know where you can obtain a machine for drawing fret lead for stained window glass.

T. J. C., of Mass.—We cannot give you the information desired respecting the dealers in pure ambergris and essential oils. The extract of ambergris to which you allude must be some adulterated product; we have never seen a pure extract of this substance.

H. K., of Boston—We have not been able to obtain a correct idea of your theory from the article you presented. Write it over again; make it more clear, and abou the same length, and we may publish it.

E. S. W., of Ill.—We cannot advise you to employ coal tar for painting the coarse boards of your barn, it has an offensive smell, and does not look well. We advise you to use a cheap oil paint.

B. H., of N. Y.—A cement made of the white of eggs, lime, and grated cheese, will unite the edges of broken glass. Small high pressure engines work more economical without than with a condenser. Water gauges cost from $5 upwards, according to their size and workman ship.

S. W. W., of Wis.—The ore which you have sent us appears to be sulphuret of lead. Roast some of it slowly. then grind and wash it, to remove the earthy matter, and then melt it in a crucible, and you will thus find out its value.

A. D. C., of Ind.—We thank you for your response to our letter of the 19th ult. It is satisfactory.

W. D., Jr., of Phila.—It requires 28 cubic inches of water at 50 degs. to condense a cubic inch of water raised in to steam—a cubic foot of steam at atmospheric pressure A cubic foot of steam, at 80 lbs. pressure, will require about five pints of water to condense it.

Money received at the Scientific American Office on account of Patent Office business for the week ending Saturday, June 7, 1856:—

W. & P., of Ill., $30; W. S., of Ga., $30; R. D. A. & Co., of Miss., $30; S. W., of Ind., $55; J. H. F., of Vt., $30; T. B., of Conn., $30; E. C. C., of Mass., $30; A. R. M., of Conn., $30; A. P. R., of Va., $30; D. D. A., of Mass., $25; F. & W., of Conn., $30; E. B. McC., of Iowa, $30; J. H., of Ky., $15; J. T. D., of N. Y., $30; J. C., of Conn., $20; A. & G. M. F., of N. Y., $30; F. J. F., of N. Y., $30; R. M. D., of Ind., $25; H. & H., of Mass., $30; E. S. W., of Ill., $55; A. B., of Mass., $50; D. B., of Conn., $30; J. M., of N. J., $10; S. N., of Conn., $25; S. D. P., of Mass., $25; J. K. D., of N. Y., $25; W. & B., of O., $30; W. M. & B., of N. Y., $27; G. H. B., of N. Y., $25; H. H. E., of Conn., $27; J. F. F., of Mass., $25; W. W. L., of Miss., $10; J. L., of N. Y., $30 J. H., of N. Y., $20; R. & G., Me., $30; G. W. O., of Ind., $30; W. & E., of Del., $30; J. D., of O., $25; H. H., of Miss., $30; O. E. P., of N. Y., $30; P. C. C., of N. H., $30; J. W., of N. Y., $90; T. G. W., of N. Y., $170.

Specifications and drawings belonging to parties with the following initials have been forwarded to the Patent Office during the week ending Saturday, June 7:—

N. B., of N. Y., (3 cases); R. M. D., of Ind.; J. K. D. of N. Y.; S. N., of N. Y.; S. D. P., of Mass.; P. C. C., of N. H.; R. W., of Conn.; H. H. E., of Conn.; J. L., of N. Y.; G. H. B., of N. Y.; W. M. & B., of N. Y.; J. D., of O.; J. F. F., of Mass.; J. W. of N. Y., (3 cases); R. B., of Vt.; F. & W., of Conn.; D. D. A., of Mass.; C. W. G., of Conn.; G. N. B., of Cal.

Important Items.

To the Unfortunate—We are no longer able to supply the following back numbers of the present volume Nos. 6, 12, 14, 15, 17, 18, 19, 21, 22, 23, 24, 25, 27, 28, 29, 30, 34, 35, and 37. Such numbers as we have to furnish, are gratuitously supplied to such subscribers as failed to receive them; and we would take occasion to state, that any person failing to receive their paper regularly, will confer a favor by notifying us of the fact. Missing numbers should be ordered early, to insure their receipt, as an entire edition is often exhausted within ten days after the date of publication.

Models—We shall esteem it a great favor if inventors will always attach their names to such models as they send us. It will save us much trouble, and prevent the liability of their being mislaid.

Patent Claims—Persons desiring the claim of any invention which has been patented within fourteen years can obtain a copy by addressing a letter to this office stating the name of the patentee, and date of patent when known, and enclosing $1 as fees for copying.

Receipts—When money is paid at the office for subscription, a receipt for it will always be given; but when subscribers remit their money by mail, they may consider the arrival of the first paper a bona fide acknowledgment of the receipt of their funds.

Literary Notices.

The Southern Quarterly Review—Vol. I, New Series. E. H. Brittan & Co., publishers, Columbia, S. C. The number before us of this distinguished review contains several very able articles. Theory of the Beautiful, The Six Days of Creation, Slavery and Freedom, the Nebular Hypothesis, Works of William Paley, Physical Geography of the Sea, and Barnard on American Colleges, are the leading papers in the number. The terms of this Review are $5 per annum.

The Inventors and Patentees' Guide—This is a neat little pocket volume, containing the U. S. Patent Laws, with the rules of procedure at the Patent Office. forms, instructions, &c. Also a list of the counties of each State, names of principal cities, with population, &c. To inventors & owners of patents this work will prove very valuable. Published at Lancaster, Pa., by the author, J. Franklin Reigart.

Linda: or, the Young Pilot—By Mrs. Caroline Lee Hentz. This is an interesting tale of Southern life and society. It is full of vivacity and stirring interest. The authoress enjoys a very extensive and substantial literary reputation. She is the writer of several most excellent works. J. B. Peterson, publisher, Philadelphia, Pa.

Blackwood's Magazine—Old Ebony for this month contains a luminous article on England's Political Future, another on the Scot Abroad—as the man of the sword; letters from the banks of the Irawaddee, an essay on the Art of Travel, &c. Blackwood is always rich and racy. Published by L. Scott & Co., 54 Gold st., N. Y.

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Private consultations respecting the patentability of inventions are held free of charge, with inventors, at our office, from 9 A. M., until 4 P. M. Parties residing at a distance are informed that it is generally unnecessary for them to incur the expense of attending in person, as all the steps necessary to secure a patent can be arranged by letter. A rough sketch and description of the improvement should be first forwarded, which we will examine and give an opinion as to patentability, without charge. Models and fees can be sent with safety from any part of the country by express. In this respect New York is more accessible than any other city in our country.

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THE MORELAND MORTISING MACHINE Company.—The patentee, Mr. Moreland, has associated himself in partnership with a number of gentlemen in this city, and the Company are now engaged in the manufacture of his Patent Boring and Mortising Machines; and after the 15th of June next they will be prepared to furnish machines of the best quality, being made of iron and steel, and are extremely strong, heavy, simple, durable, and not liable to get out of order. This machine is well adapted for railroad car building, reaping and thrashing machines, also for wagon and carriage hubs of every description. It works two chisels, that act independent of each other, which can be set to give the required taper to the mortise to suit the spoke, no trimming being necessary. The manufacture of this machine has been retarded by Mr. Moreland losing all his machines, tools, patterns, &c., by fire, orders and communciations relative to said machine, from April 4, 1855, have not been received by proper parties. All communications to receive attention should now be addressed to the Moreland Mortising Machine Co., Adrian, Mich. 40 3*

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NORCROSS ROTARY PLANING MACHINE.—The Supreme Court of the U. S., at the Term of 1853 and 1854, having decided that the patent granted to Nicholas G. Norcross, of date Feb. 12, 1850, for a Rotary Planing Machine for Planing Boards and Planks is not an infringement of the Woodworth Patent.

Rights to use the N. G. Norcross's patented machine can be purchased on application to N. G. NORCROSS, 208 Broadway, New York.

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AGENCY FOR THE PURCHASE AND SALE of valuable patents and inventions, T. H. LEAVITT, No. 1 Phœnix Buildings, Boston. None but matters of real merit and utility will receive any attention. Circulars containing further information may be had on application. 29 12*

Science and Art.

Fish Eggs.

At a late sitting of the French *Societe Zoologique d' Aclimation*, M. Millett detailed a series of experiments he has lately made in conveying fecundated fish eggs, The result was, he said, that the eggs, when wrapped up in wet cloths and placed in boxes with moss, to prevent them from becoming dry and being jolted, may safely be conveyed not only during twenty or thirty, but even more than sixty days, either by water, railway, or diligence. He added, that he had now in his possession eggs about to be hatched, which have been brought from distant parts of Scotland and Germany, and even from America. M. Millet stated a fact which was much more curious—namely, that fecundated eggs of different descriptions of salmon and trout do not perish, even when the cloths and moss in which they are wrapped become frozen. He had even been able, he said, "to observe, by means of a microscope, that a fish just issuing from the egg, and of which the heart was seen to beat, was not inconvenienced by being completely frozen up. This he explained by the fact that the animal heat of the fish, even in the embryo state, is sufficient to preserve around it a certain quantity of moisture."

Does the Moon Rotate.

In all works on astronomy, it is assumed and taught as a fact, that the moon revolves on its axis once in twenty-eight days. J. Symonds, an inspector of schools, in England, wrote a letter to the *London Times*, expressing his surprise that natural philosophers should have maintained such a dogma, and that it should be taught in all schools as a fact of science. If his conclusions were wrong, it would have been very easy for astronomers to have set him right, but not one of the eminent astronomers in England, have presented a single good and conclusive argument in favor of the moon rotating theory, while some have rather abused the inspector for questioning the old dogma. It is a positive fact, that a great deal of what is taught in schools is assumption, not fact. Assumptions by frequent uncontradicted repetition come to be regarded in the course of time, by students, as facts. This has been the experience of every man of an original mind, and it has thus been the means of clogging the wheels of science. As it relates to the common astronomical assumption, viz., that of the moon's rotation on her axis once in 28 days, how can this be so when it continually presents the same face to the earth? If it has a rotation on its axis, it should preeent different phases. We perceive than Evan Hopkins, C. E., and David Mushat, M. E., in the *London Mining Journal*, have sustained the views of Mr. Symonds in very able articles.

Form of the Earth.

The earth being round like a ball, it follows that at a certain distance, even though our vision can reach much further, its form will prevent us from seeing objects even if its surface were perfectly smooth. It has been calculated that at 600 yards an object one inch high cannot be seen in a straight line; at 900 yards, two inches; at 1400 yards, five inches; at one mile, eight inches; three miles, six feet, so at that distance a man would be invisible. In leveling, it is usual to allow the tenth of an inch in every two hundred yards, or eight inches in a mile, for convexity.

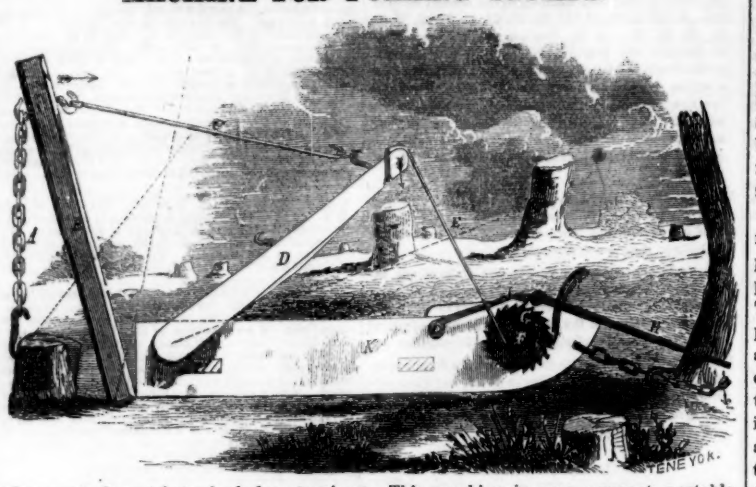
Improved Stump Puller.

The old fashioned way of getting rid of stumps was to let them stay in the soil and rot. The clearing-up of a piece of ground required half a generation; our forefathers took things easy, and were in no hurry. But the modern "go-ahead" principle recognizes no such waste of time. Our modern farmers enter a forest in the morning, fell the trees, cut them into lumber, and pull the stumps, all by machinery; in the afternoon they plow the ground, and seed it down into smooth meadows.

Our engraving shows a recent improvement in stump pullers, for which letters patent were granted to Mr. Solomon W. Ruggles, Fitchburg, Mass., May 6, 1856.

The chain, A, is attached by a hook, at one end, to the stump, and at the other to a strut, B; this is connected by rod, C, with lever D, the forward end of which has a strap, E, which winds around the shaft, F; this shaft has a ratchet wheel, G, upon it, operated by lever, H. When the lever is raised, the pawl, I, catches in the teeth of the ratchet wheel, G, and turns it in direction of the arrow; the pawl, J, holds the purchase obtained and prevents the ratchet wheel from turning back. By the winding of strap E on shaft F, the lever, D, is brought down, strut, B, raised to a perpendicular position, and the stump pulled. Most of the parts are attached to the sled, K, on which they are conveniently transported from place to place.

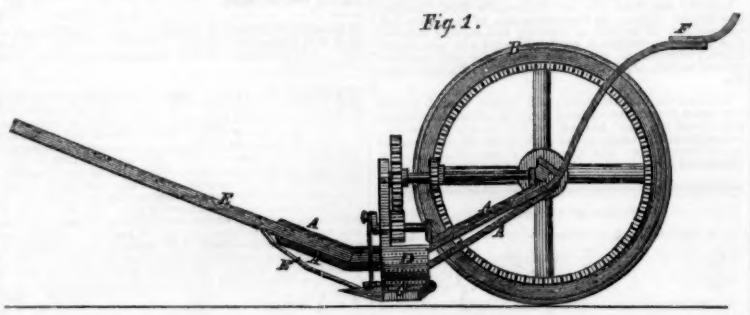
MACHINE FOR PULLING STUMPS.



This machine is very compact, portable, and economical to manufacture. It is also very powerful. A force of 200 lbs. applied to the end of lever H, will lift 2000 tuns on chain, A. The power of the apparatus is only limited by the strength of the wood and iron of which it is made. Address the inventor for further information.

IMPROVEMENT IN MOWING MACHINES.

Fig. 1.



New Mowing Machine.

Machines for mowing are coming into such general use, that any improvement which has for its object the lessening of the expense of their construction, is worthy of attention.

The invention illustrated by the accompanying engravings belongs to this class. Figure 1 is a side elevation; figure 2 a top view, and fig. 3 a section.

One improvement consists in making the frame, A, of light strong iron, and placing the driving wheel, B, between, as shown in fig. 2. The driving wheel has cogs upon it, by means of which, and suitable pinions, pitman, &c., motion is given so the cutters, C. The machine is rendered very compact. The method of constructing the frame and attaching the tongue is at once simple, strong, and economical in construction. The joint between bars D and G is also cheap, but very strong. This invention possesses several valuable features, and will, no doubt, find favor among agriculturists.

Fig 2.

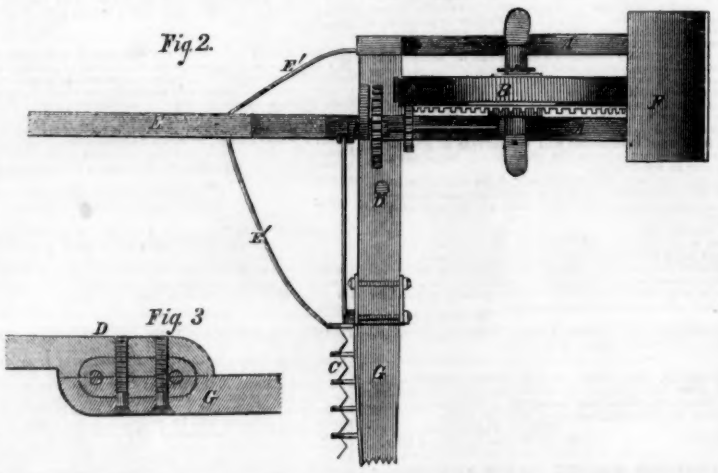


Fig. 3

The inventor is Mr. Collins B. Brown, Alton, Ill. Further information can be had by addressing Messrs. Buckmaster & Wise, as above, who are jo nt owners and extensive manufacturers. Patented Sept. 4, 1855,

Gold Coinage.

In March last, $2,580,000, in double eagles, were coined at the Branch Mint in San Francisco.

Every real invention is a point gained by the world.

Improved Ventilation of Ships.

A very great improvement has taken place in the ventilation of ships trading between our Atlantic and Pacific ports. Great losses had been experienced upon goods sent to California from *sweating*, caused by defective ship ventilation. These losses fell upon the owners of the merchandise; for, strange as it may seem, it had been decided in suits at law that the ships were not liable for damages. An improved system of ship ventilating was imperitively demanded, and we understand, by the San Francisco *Chronicle*, that this want has been supplied. The clipper ship *Electric Spark*, from Boston, arrived at San Francisco on the 9th April, with an improved plan of ventilation, which operated so well that all the goods were found in the most excellent order, and the very paint between decks looked as fresh as when put on—something not witnessed there before. The plan of ventilation is seemingly very simple; its object being the continual ingress of a current of fresh air between decks, and the egress of foul air to prevent the heavy moisture, while in the tropics condensing (sweating) on the sides and under the decks The apparatus consists in having between decks two large perpendicular spouts forward under the top-gallant forecastle, which can be kept open in all weathers; ten smaller spouts descending on the inside of the main deck house, but receiving air outwardly from the side of the house; and lastly, six similar spouts aft in front of the poop. The spouts in the main deck house only are closed in bad weather. These spouts are square and made of wood and are arranged in such a manner as to occupy little space while the ship is under way; the greater part of the time a constant and free circulation of air is going on below; and even in the worst of weather, the two spouts forward remain open to permit the egress of foul air. Other ships trading to California have also adopted the same ventilating system and with equal success.